

Klangfarbenmelodie in 1911: Timbre's Functional Roles in Webern's Opp. 9 and 10 *

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KEYWORDS: Timbre, Texture, *Klangfarbenmelodie*, Progression, Anton Webern, Arnold Schoenberg

ABSTRACT: Anton Webern's pre-World War I aphoristic works sometimes appear to defy comprehension, but through the lens of *Klangfarbenmelodie* organizing principles of this music come into focus. *Klangfarbenmelodie* is a multifaceted principle of musical organization. It is how *Klangfarbenfolgen*—timbral progressions—are structured into music. This article explores timbral progressions in Webern's music and some of the types of timbre-based musical logic that organize them. Timbre and pitch are simultaneous, codependent, and symbiotic. With the notion of timbre as the totality of musical tone, this article examines how timbral-registral space is employed to compose timbral trajectories like expansions, contractions, and crossing lines. In addition to drawing out timbral lines, the analyses focus on how timbre helps delineate pitch constructs, timbre's role in structuring gesture and theme, and various types of timbral symmetry. Rather than a shift away from pitch analysis, this article proposes a repositioning toward the inclusion of timbre in analytic discourses.

Received December 2021

Volume 28, Number 1, March 2022
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1. Introduction

[1.1] For Anton Webern, "The ultimate principle in the presentation of a musical thought is comprehensibility" (1958, 22). Generations of scholars have sought structural determinants in Webern's music in aspects of pitch, but through the lens of *Klangfarbenmelodie*, timbre also contributes to compositional comprehensibility. Arnold Schoenberg's theorization of *Klangfarbenmelodie* in his treatise *Harmonielehre* was published in 1911. That same year, Webern showed works to Schoenberg hoping his teacher and friend would find *Klangfarbenmelodie* in his new compositions. Examining Webern's works from 1911 reveals organizational principles based on timbre that help bring musical logic in Webern's aphoristic works into focus.

[1.2] Timbre and pitch are simultaneous, codependent, and symbiotic. Every timbre contains pitch, whether definite or indefinite, and every pitch is perceived in a timbre. A common challenge to considerations of timbre as a functional parameter in music is the misconception that it might

undermine pitch. Timbre cannot and does not negate pitch, but neither does pitch eliminate timbre as a salient aspect of music. Considering timbre as a central concept in analytic narratives only adds to the possibilities; it does not take anything away. The notion of timbre-music that Schoenberg articulated, and that Webern elevated and refined, had an enormous impact on twentieth-century composition. But as of yet, timbre has failed to make the same level of impact in analytic discourses. In this article, I seek a repositioning toward the inclusion of timbre in conjunction with other parameters. Analyses incorporating both timbre and pitch can provide a more thorough understanding of the music than either parameter is capable of alone, and it also creates new ways to consider pitch.

[1.3] Timbre and pitch may coexist relative to each other, yet most analytical approaches only take one (pitch) or rarely the other (timbre) into account. The analytical corpus of studies on Webern's free atonal works is largely pitch centric.⁽¹⁾ As Allen Forte puts it, "Pitch is assumed to have been Webern's primary concern as he composed this music, with other musical parameters being significant, but conceptually secondary" (1998, 5–6). While this is but one author's comment, it is generally representative of many previous approaches. Yet, Webern's letters during the pre-World War I atonal (pantonal) period refer to timbre as an artistic domain of his compositional discourse. Writing to Schoenberg on August 23, 1911, Webern exclaims, "I can hardly wait to show you [op. 9, nos. 2–5] and my seven orchestral 'chamber pieces' [including op. 10, nos. 1 and 4]. What will you say to them? They consist of a change of colors [*Wechsel der Farben*] in sixteenth and thirty-second notes" (Moldenhauer 1979, 195).⁽²⁾ Again, Webern highlights timbre in op. 9, nos. 2–5 in a letter to Alban Berg dated May 23, 1913: "You must look closely at the instrumentation. You have to imagine very precisely these mixtures and alterations of the various bowing possibilities (*col legno, sul ponticello, naturale, etc.*)" (191).⁽³⁾ Webern's concern for timbre is evident in these letters.

[1.4] It is unclear exactly when Webern learned of Schoenberg's theorization of *Klangfarbenmelodie*, but it seems likely that by the summer of 1911 Webern either read about it in Schoenberg's pre-publication drafts of *Harmonielehre* or that the two composers had discussed the idea. The manuscript of *Harmonielehre* was completed in 1910, and Webern had read at least a portion of it by July 6 or 7, 1911, perhaps earlier (Puffett and Schingnitz 2020, 131–32). Once it was published, Schoenberg received his copy on December 5, 1911, and showed it to Webern the following day (133). Nearly a month earlier, Webern wrote about *Klangfarbenmelodie* to his friend, the musicologist and conductor Heinrich Jalowetz:

Zehlendorf, November 12, 1911

...

Schoenberg very much likes my essay about him. Likewise, my new compositions. He had a great impression of them. He even wants to write something about them. He thinks that they are already a melody of timbres! I am happy! (Webern 1999, 175)⁽⁴⁾

The joy expressed in Webern's letter to Jalowetz indicates the importance of *Klangfarbenmelodie* to him at the time. Though it is difficult to establish when or in what manner Schoenberg and Webern may have discussed *Klangfarbenmelodie*, it is a relatively straightforward task to identify the possible pieces Webern showed to his teacher in Berlin in 1911. The candidates are those referred to in the letter of August 23, 1911, above: *Sechs Bagatellen für Streichquartett*, op. 9, nos. 2–5, and 5 *Stücke für Orchester*, op. 10, nos. 1 and 4, as well as five other short orchestral works that are not published.⁽⁵⁾ Through detailed analyses of op. 9, nos. 4 and 5 and op. 10, nos. 1 and 4, this article demonstrates how timbre functions as an organizational parameter in these works' musical structure. But before proceeding to analytically parsing Webern's works, I first examine the concepts of timbre and *Klangfarbenmelodie*.

2. Concepts: Timbre, *Klangfarbenmelodie*, and *Klangfarbenfolgen*

[2.1] Analyzing timbral function in *Klangfarbenmelodie* works raises two foundational questions. What is *Klangfarbenmelodie*? And even before that: what is musical timbre?

[2.2] Identifying timbre seems easy: it is what makes a violin sound like a violin and an oboe an oboe. It is also what makes my violin sound different from your violin. On the other hand, defining timbre is far more complex. There is something enlightening in the intentional imprecision of Isabella van Elferen's (2021, 72) explanation, "In its most basic definition, timbre is musical difference." According to psychoacousticians Kai Siedenburg, Charalampos Saitis, and Stephen McAdams, "Roughly defined, timbre is thought of as any property other than pitch, duration, and loudness that allows two sounds to be distinguished" (2019, 1). Yet, timbre also covaries with pitch and loudness (McAdams 2019a, 50–52). McAdams puts it simply, "Changing the pitch or the musical dynamic also changes the timbre" (2019b, 221). Albert S. Bregman explains:

[I]f we create a synthetic timbre by copying the spectral envelope (the shape of the spectrum) of an oboe playing a middle C. . .the result sounds like an oboe. However, if we synthesize a tone an octave above or below the original by using the original tone's spectral and temporal envelopes, the result will not sound much like an oboe. This means that there are changes in the spectrum and dynamics of an oboe that are locked together with changes of pitch. (1990, 484–85)

Psychoacoustics confirms what can be readily discerned in the ordinary experience of listening to instruments: the timbre of an instrument changes as the pitch changes. For example, the quality of pizzicato C₂ on a cello sounds markedly different than that of pizzicato C₅ on the same instrument. Not only does the timbre of an instrument change with register, but also with articulation. In other words, an instrument may have a practically infinite variety of timbres. According to McAdams and Siedenburg, "An instrument. . .does not have 'a timbre,' it has a constrained universe of timbres that covary with the other musical parameters" (2019, 71).

[2.3] For the purpose of this discussion, *timbre is the totality of a musical tone (or any sound) not including pitch class or duration*. This definition differs from some previous definitions in four substantial ways. First, it includes articulation. Different types of articulation such as legato and staccato (etc.), accents, or instrument-specific articulations—for example, various on-the-string and off-the-string bowings for the violin family—all translate to changes in playing technique that alter timbre since they affect the mechanics of sound production and the resulting vibrations. Expressive markings may also fall into this category if they impact playing technique. Second, it includes the contribution of loudness. A tone played loudly on a violin has a different perceived sound quality than the same pitch and duration played softly on that same instrument. The timbre of the instrument changes as playing force is modulated by the performer because the forces applied to the sounding mechanism change. In this way, loudness is also a type of articulation. Third, it takes spatial location into account. As location of a sound source changes relative to the listener, so does the perceived timbre. Even though the physical vibrations produced by the instrument may be identical in both locations, the sound waves' transit to our ears is not.⁽⁶⁾ Finally, and perhaps most importantly, this definition of timbre includes the registral aspect of pitch. It is necessary, here, to distinguish between pitch-in-register and pitch class. Pitch class is a relational convention based on octave equivalence applied to perceived fundamental pitches. The extent to which pitch class communicates information about an actual sounded tone and its perceived fundamental frequency is limited to the context of this relational system of classification. On the other hand, pitch-in-register describes aspects of the sounded tone and its perception by locating that pitch in the registral profile of its sounding timbre. As analysts, we can discuss pitch and timbre separately, but they always occur together in music. It is impossible to perceive a pitch without also hearing it in a timbre. Timbres can be perceived with a single fundamental, with multiple pitches as a multiphonic, or with indefinite pitch. Reuniting timbre with its registral attributes in analytic discourse offers the opportunity to create deep and rich musical interpretations.

[2.4] Musical tones (sounds) are never just one or another parameter; they always have the attributes of timbre, pitch (definite or indefinite), duration, loudness, and spatial location simultaneously. This understanding of the musical tone leads to the practical approach that a *musical tone (sound) is a timbre that contains pitch (definite or indefinite) and lasts a duration*. This view resembles Schoenberg's understanding of tone production and perception as expressed in his *Harmonielehre* when he was theorizing *Klangfarbenmelodie*. According to Schoenberg:⁽⁷⁾

In a musical sound (*Klang*) three characteristics are recognized: its pitch, color (timbre), and volume. . . the tone becomes perceptible by virtue of tone color, of which one dimension is pitch. Tone color is, thus, the main topic, pitch a subdivision. Pitch is nothing else but tone color measured in one direction. (1978, 421)

From the Helmholtzian scientific viewpoint that Schoenberg understood, a tone is the collective result of its partials, including the fundamental and its overtones. Since the partials are not perceived individually by the ear, they are heard in their totality as the tone's timbre. The fundamental is parsed separately because of its position (and often its strength) relative to the other partials in the tone; therefore, a pitch is heard as part of the tone. Schoenberg's view that pitch is a subdivision of timbre is entirely justified by his understanding of the actual phenomena of tone production and perception: timbre is the totality of the tone, the fundamental with all of its partials; pitch is only the fundamental.

[2.5] Though I view it from the opposite side of the same lens, the notion of the totality of the tone is what allows Alfred Cramer (2002) to consider timbre as an aspect of pitch. Cramer counters the historical view of timbre and pitch as separate and distinct aspects of the musical tone through interpreting Helmholtzian *Klang* theory to mean that timbres are "not attributes of discrete tones, and they are not distinct from pitch" (2–3). For him, timbre results from pitch, both from perceived fundamentals and unperceived attributes (13–28). Cramer extends Schoenberg's reliance on the overtone series to find that the "coloristic contribution of a tone [is] a function of its pitch" (30). Considering timbre as a part of pitch allows Cramer to frame *Klangfarbenmelodie* as a harmonic principle. According to him, "*Klangfarbenmelodie* [is] harmony composed of reified overtones" (3n13). But Schoenberg also relates the overtone series to timbre as we commonly call it. Of the "more distant overtones" Schoenberg (1978, 20) writes, "Even if the analyzing ear does not become conscious of them, they are still heard as tone color." He describes timbre as the "musical ear" processing the "impression" of a tone rather than attempting "direct analysis" (20). Though *pitch as an aspect of timbre* and *timbre as an attribute of pitch* view the totality of the tone from different angles, both approaches agree that in the case of *Klangfarbenmelodie* works, "Pitches in their compositions were meant to form elements of acoustic wholes, originating not as points forming designs with one another in pitch-space, but as elements in progressions of coloristic sonorities" (Cramer 2002, 32). In Schoenberg's words, "The tone is the material of the music. It must therefore be regarded with all its properties and effects, as suitable for art" (1978, 20). In this article, I follow Schoenberg and consider pitch contained within timbre, once again allowing *Klangfarbenmelodie* to be framed through what Schoenberg calls "simply 'tone color'" (1978, 421).

[2.6] For over a century, commentators have grasped at the "melody" portion of the term, describing *Klangfarbenmelodie* as timbres connected sequentially through time—but Schoenberg (1911, 471) refers to such successions as *Klangfarbenfolgen* (timbres-sequences or timbres-progressions), conveniently translated as timbral progressions. After considering the potential for a system of describing and organizing timbres themselves, similar to theories used for systematizing pitch, Schoenberg concludes, ". . . but we do write progressions of tone colors [*Klangfarbenfolgen*] without a worry, and they do somehow satisfy the sense of beauty" (1978, 421).⁽⁸⁾ His proclamation of *Klangfarbenmelodie* actually answers the question he subsequently proffers about *Klangfarbenfolgen*: "What system underlies these [timbral] progressions?"⁽⁹⁾ Schoenberg declares:

Now, if it is possible to create patterns out of tone colors [*Klangfarben*] that are differentiated according to pitch [*Höhe*], patterns we call 'melodies,' progressions, whose coherence (*Zusammenhang*) evokes an effect analogous to thought processes, then it must also be possible to make such progressions out of the tone colors [*Klangfarben*] of the other dimension, out of what we call simply 'tone color' [*Klangfarbe*], progressions whose relations with one another work with a kind of logic entirely equivalent to that logic which satisfies us in the melody of pitches [*Klanghöhen*].⁽¹⁰⁾ (Schoenberg 1978, 421)

Klangfarbenmelodie is the notion of organizing *Klangfarbenfolgen*.⁽¹¹⁾

[2.7] The canonical narrative of *Klangfarbenmelodie* has been shaped by two competing definitions: (1) a quasi-static pitch with transforming timbres, and (2) the fragmentary, pointillistic distribution

of linear pitch material among different timbres. Both approaches are methods of creating timbral progressions. In other words, these “two strands of *Klangfarbenmelodie*” as Jennifer Iverson (2009, 144–91) calls them, are actually two different styles of presenting *Klangfarbenfolgen*. The two stylistic strands—transformational and fragmentary, historically referred to as “Schoenbergian” and “Weberian” respectively—develop from different ways of creating and combining timbral progressions. The two styles can be effectively illustrated through Ligeti’s approach as described by Iverson. Ligeti distinguishes between composition *with* timbres and composition *of* timbres. Iverson’s (2009, 157–58) investigation shows that when Ligeti taught composition *with* timbre he used Webern’s opp. 6, 10, and 29 to elucidate how timbre delineates structure, while he used Schoenberg’s op. 16, no. 3, “Farben,” to illustrate composition *of* mixed sound colors, or, as we now prefer, blended (emergent or augmented) timbres. As she explains, “Ligeti both received and propagated this bifurcated historical narrative” (156). The canonical domino effect was initiated, transmitted, and proliferated throughout the twentieth century. Reframing our understanding of these two approaches as strands of timbral progressions—that is, of *-folgen* rather than *-melodie*—opens the possibility of new ways to hear and understand *Klangfarbenmelodie* in this music.

[2.8] This article explores timbral progressions in Webern’s music and some of the types of timbre-based musical logic he employs to organize them. New insights are possible by considering timbre in addition to pitch and building upon previous threads in the theoretical narrative such as chromatic aggregates, various types of symmetry, and wedge constructions. In addition to drawing out timbral lines, each of the subsequent analyses focuses on a different aspect of how timbre functions to provide structure and promote coherence and comprehensibility in Webern’s music. The analysis of Bagatelle no. 4 (op. 9) illustrates how timbre helps delineate pitch constructs such as chromatic aggregates, while that of the Fifth focuses on timbral lines and how they elucidate wedge constructions and inversional symmetry. Moving to op. 10, the analysis of Orchestral Piece no. 1 shows Webern’s use of retrograde symmetry to define form, and that of the Fourth explores timbre’s role in structuring gesture and theme. This investigation makes use of a new analytical apparatus to visualize analytical segmentations and stratifications in Webern’s music: *block topography*. Block topography arranges *musical blocks*—portions of music grouped according to salient analytical, compositional, or perceptual factors—into varying textures. The arrangement of musical blocks is organized into three topographical classifications:

- *Monophonic block topography* is the sequential presentation of musical blocks without overlap.
- *Homophonic block topography* is the simultaneous presentation of multiple musical blocks with a dependent foreground and background relationship.
- *Polyphonic block topography* is the simultaneous presentation of multiple musical blocks as independent lines or voices.⁽¹²⁾

Example 1 shows generic sample configurations of the three topography types. In practice, block topographies are often complex and may be illustrated in mixed topographies as dictated by the music and the type of analysis undertaken. Block topography is not a method of deciding what gets analytically segmented—it is a method of visually depicting analytical choices. The boundaries of musical blocks may be determined through a variety of means such as traditional analytical categories, perception and auditory chunking, or any novel method.⁽¹³⁾

3. Timbral Considerations in Webern’s Op. 9 Bagatelles

[3.1] Throughout all six of Bagatelles in Webern’s op. 9, there is an omnipresent elevation of timbre through playing technique. Above all, Webern’s extensive use of *am Steg* (*sul ponticello*) bowing is a concrete, physical move away from pitch primacy. Bowing at the bridge reduces the perception of the fundamental frequency in comparison to its overtones—so much so, that depending on the performer’s technique, a fundamental may not even be discernable.⁽¹⁴⁾ Physicist Joe Wolfe (n.d.) has shown that the second, third, fourth, and sixth harmonics are much more prominent than the fundamental in at-the-bridge bowing. Patricia and Allen Strange describe it well: “The nebulous environment suggested by *sul ponticello* is created by the narrow boundary between a slight pitch

and the production of a non-pitched timbre” (2001, 3). More accurately, bowing at the bridge can produce a timbre of indefinite pitch. Second, artificial and natural harmonics reduce the fundamental in favor of the much more prominent overtone sounded by the fingered node. Webern regularly employs artificial harmonics with resultant tones two octaves above the stopped fundamental. Pitches are still perceived, but compositional weight is placed on the timbre. If the pitch was all that Webern had wanted, there would be no need for the harmonics; the instruments could play the same absolute pitches in pure tones. The timbral contrast between tones in harmonics and those that are not draws attention to the shift in color. In the Bagatelles, harmonics help to elevate timbre to a compositionally salient position.

[3.2] Several other techniques also work to promote timbre’s saliency. Webern’s extensive use of mutes is a physical reduction of sound across many of its properties. When mutes are employed in music, the perception of pitch and duration is largely unaffected, but timbre is accentuated as a manipulated compositional parameter. Both Bagatelles analyzed below are performed entirely with mutes (*mit Dämpfer*). Playing at the fingerboard (*am Griffbrett*) also changes the spectral characteristics of the tone. It does not reduce or mask the fundamental in the same way playing at the bridge does, but it moves the sound away from prototypical unmodified arco tones. Tremolo de-emphasizes pitch by creating a constant state of acoustic attack, eliminating the more stable sustain portion of the tone’s ADSR (attack-decay-sustain-release) envelope. In combination with *am Steg*, tremolo at the bridge heavily masks the fundamental pitches sounded by the technique. Finally, Webern’s instruction *an der Spitze*—at the tip [of the bow]—shows the familiarity he had with string instruments and his insight into timbral control. By playing at the tip of the bow, its weakest point, additional bow pressure may be required from the performer. This increase in pressure also increases the amount of bow noise present at the beginning of each stroke. Playing at the tip is yet another, albeit more subtle, way to emphasize timbre.

[3.3] Many approaches to Webern’s op. 9 have struggled to make sense of the Bagatelles. In his 1932–33 lectures, Webern famously said, “About 1911 I wrote the ‘Bagatelles for String Quartet’ (op. 9). . . . Here I had the feeling, ‘When all twelve tones have gone by, the piece is over.’” He continued, “The most important thing is that each ‘run’ of twelve notes marked a division within the piece, idea, or theme” (Webern 1975, 51). Surprisingly, many pitch-based approaches have struggled to identify the division by aggregates Webern spoke of. For example, Chrisman’s (1979, 81) focus on pitch-class repetition guided him to challenge Webern’s statement of the works’ organization, and Davies goes even further to claim: “None of the Bagatelles can be accurately described in this way” (2007, 54n15). Notwithstanding these assessments, the analytical explorations of Chrisman and Davies both provide valuable foundations to be built upon. If timbre is allowed to inform the analytical approach, musical ideas, formal boundaries, and the segmentations of pitch aggregates become more recognizable; with this in mind, I conduct a timbral analysis of Webern’s op. 9, nos. 4 and 5 and op. 10, nos. 1 and 4 in the four sections below.

4. *Op. 9, No. 4*

[4.1] It is enlightening to begin this timbre-based study with a short discussion of pitch. Bagatelle no. 4 contains two aggregates of chromatic saturation governed by timbre and musical phrasing. There only two D#/E♭s in the piece: E♭5 (Violin I, mm. 1–2) and D#4 (Violin II, m. 3). Naturally, these two tones will be the center of debate in issues of aggregate segmentation. If seeking divisions by aggregate and considering pitch class only, the first twelve-tone aggregate would be complete with the first thirteen tones of the work with Violin II’s B♭4 in measure 3 (**Example 2**), allowing the D# to function in the second aggregate. There are several ways to reasonably partition the aggregate into tetrachords or hexachords. One potentially desirable grouping would be to take the first four sounded tones [A♭6 B♭3 E♭5 E♭6] and the cello in m. 2 [C#3 D#2 F#2 F#3], leaving the viola’s B♭5 and C#5 (m. 1) to be paired with the second violin’s G#4 and G#4 (mm. 2–3). All three of the resulting tetrachords are comprised of semitonal pitch-class pairs. Tetrachords of this type are pervasive in Webern’s pitch language of the freely atonal era and Chrisman identifies a number pitch-class sets with this characteristic in his investigation of op. 9.⁽¹⁵⁾ Other likely tetrachord groupings are possible by taking the first four melodic tones of the second violin or pairing that

instrument's sustained B \flat 3 with the simultaneous descending trichord in the viola (m.1), retaining the cello tetrachord in m. 2, and grouping the remainders as needed. Alternatively, reasonable ways to partition these opening tones into hexachords could be to group the first violin and cello, allowing the repeated B \natural to link the second violin and viola, or to take the first six tones and then the remainder.⁽¹⁶⁾ Following any of these pitch readings, the second aggregate could include Violin II's D \sharp 4 (m. 3).⁽¹⁷⁾ But all of these interpretations would necessitate finding a division that contradicts timbral stratification and segmentation as well as the composer's notated phrasing. In m. 3, Webern prescribes through the second violin's slurred articulation and decrescendo that the A \sharp 3-D \sharp 4 belong with the B \natural 4-G \sharp 4 (**Example 3**).

[4.2] Taking timbre into account, the composer's notated phrasing, auditory streaming, and timbral progressions all dictate that Violin I's *am Steg* E \flat 5-A \natural 6 oscillation (mm. 1–2) belongs to the second chromatic aggregate, and the A \sharp 3-D \sharp 4 at the end of Violin II's slurred statement (m. 3) are part of the first aggregate. Measures 1–3 in Violin II represent a cohesive musical statement, complete with its own arch-shaped contour and dynamic swell, characteristics that will become recognizable throughout Webern's phrase structures in the Bagatelles composed in 1911. The peak of its crescendo-decrescendo pattern coincides with its highest registral locus. The timbral similarity of its arco bowing results in continuity throughout the slurred statement. Likewise, the cello's slurred arco *am Griffbrett* tetrachord coheres as a musical unit through its timbral similarity (m. 2). The timbre of the arco bowings links the second violin with cello in these first three measures. In contrast, the first violin's high register *am Steg* is markedly distinct from the arco timbres of the second violin and cello, creating a fundamental contrast in the piece. The *am Steg* has such a powerful timbral character that it separates from the timbres of arco (including *am Griffbrett*) and pizzicato; these latter two timbres are united through being "not-*am Steg*." The timbral dissimilarity between *am Steg* and not-*am Steg* creates textural stratification. Depicting these groupings as musical blocks: **Block 1** contains the not-*am Steg* Violin II, Viola, and Cello in mm. 1–3; and **Block 2** is the *am Steg* Violin I in mm. 1–2 (**Example 4**). Along with the notated articulation, the timbral similarities that bind Block 1 and distinguish it from Block 2 as not-*am Steg*, cohere its pitch content as an aggregate. Instead of the first violin's *am Steg* E \flat 5 and A \natural 6, the second violin's arco A \sharp 3 D \sharp 3 provide the necessary pitch classes to complete the aggregate. In other words, timbre delineates the pitch structure by influencing which D \sharp /E \flat belongs to which aggregate.⁽¹⁸⁾

[4.3] Timbre functions to promote Block 2's independence from Block 1, and to connect it with the music to come. Throughout the work, Violin I is texturally stratified from the other three voices. **Example 5** depicts the complete block topography of Bagatelle no. 4. The musical blocks are numbered in order of their entrance. The work's mixture of polyphonic and homophonic block topographies is illustrated by simultaneous blocks that do not overlap (polyphonic) and those that do (homophonic). Blocks 1–2 retain their co-equal textural independence, but after that a foreground-background texture develops. **Blocks 3–4** (mm. 3–5) combine to create a homophonic texture with *am Steg* portato foregrounded over the not-*am Steg* emergent timbre of pizzicato tenuto combined with harmonic tenuto marcato (**Example 6**). The two blocks also create a tetrachord of semitonal pitch class pairs: [E \natural 4 F \sharp 6 B \flat 5 B \natural 2]. **Blocks 5–6** (mm. 5–8) join in homophony as well (**Example 7**). In Block 5 (Violin II, Viola, Cello in mm. 5–7), the quartet's three lower voices are stacked in a proportional rhythmic design with onsets in the ratio of 6:9:12.⁽¹⁹⁾ Like rain falling from different clouds, the three lower lines stream together in a shower of metrically displaced drops. Block 5 also presents a tetrachord of semitonal pitch class pairs: [F \sharp 4 G \sharp 3 C \sharp 4 D \sharp 5]. Block 6 (Violin I in mm. 5–8) is the textural counterpart of Block 5. Considered on its own, it could almost be called a "melody." However, that would unjustly impart thematic status to it. The first violin's line realizes the full rhythmic design with the next decreasing factor in the metric object established in Block 5, making the proportion of onsets 4:6:9:12 between all four voices. Even though intimately entwined with the other voices rhythmically, timbral and registral contrast cause Block 6 to segregate from Block 5 and create a homophonic texture. Webern ensures that the textural layers do not stream together by assigning the two harmonics timbres to the most diverse rhythms and separating the stream onsets by over two octaves, thereby minimizing the possibility of integration through timbral similarity. Registrally, the lower three voices are anchored within G \sharp 3 to F \sharp 4. The D \sharp 5 that extends beyond this tessitura is tethered to C \sharp 4 and

maintains its textural unity with the rest of Block 5. However, Block 6's high register (E \sharp 6–C \sharp 7) contributes to its individuality.

[4.4] In Bagatelle no. 4, two crossing timbral lines emerge to dominate the texture. Slightly rearranging the orientation of the musical blocks illustrates the timbral lines and their registral trajectories (**Example 8**). Characterized by their timbres and articulations, the two contrasting lines are termed the "*am Steg/staccato*" and "*not-am Steg/legato*" lines. The *am Steg/staccato* line (Blocks 2, 3, and 5) is governed by its namesake timbre, but also includes pizzicato and arco staccatissimo harmonics. Its articulations involve an aspect of disconnectedness. The oscillating *am Steg* music, even though it is a slurred gesture, forms a cohesive timbral line with the repeated staccato tones of Block 3 (mm. 3–5). Block 3 brings *am Steg* down from its upper reaches to a middle register, connecting the first violin in mm. 1–2 with the second violin in mm. 5–6. Second, the registral leap within the gesture separates the tones. Probably not coincidentally, E \flat 5 cannot be played on the E string, eliminating the possibility for a greater sense of connection with the slurred A \sharp 6. Webern employs the same strategy in the second oscillation as C \sharp 4 is a semitone below the violin's open D string. Cohesion of the *am Steg/staccato* line comes not only from its timbre, but also from repetition as a gesture. Throughout the movement, the *am Steg* timbre repeats either a single tone or the oscillating leap. Block 5 (Violin II, Viola, Cello in mm. 5–7) combines aspects of Blocks 2–3 into a unified statement. The *am Steg* oscillating leap, now registally centralized from its higher position in mm. 1–2, is incorporated with two levels of repeated tones issuing from the repetition in Block 3. *Am Steg* creates a strong sense of timbral similarity unifying Blocks 2, 3, and 5. A single, cohesive line develops that spans from the first violin's E \flat 5–A \sharp 6 (mm. 1–2) oscillation through the E \sharp 4 repetition (mm. 3–5), culminating with Block 5 as an integrated textural layer in the lower three voices (mm. 5–7). The *am Steg/staccato* line traverses a descent of over three octaves, from A \sharp 6 to G \sharp 3.

[4.5] The extended downward plunge of *am Steg/staccato* line is mirrored by its counterpart: the *not-am Steg/legato* line (Blocks 1, 4, and 6) which is characterized mainly by slurred arco in both natural (including *am Griffbrett*) and harmonic tones with occasional tenuto pizzicato and one instance of tenuto marcato harmonics. The *not-am Steg/legato* line mounts a drastic ascent from D \sharp 2 to C \sharp 7. The bowed tones of Block 1 (mm. 1–3) highlight the lower registers of their instruments, while the harmonics of Block 6 (mm. 5–8) showcase the violin's upper register. Preparing the nearly five-octave leap are tenuto articulations. The cello's tenuto pizzicato B \sharp 2 in m. 4 extends the lower tessitura into Block 4, while the viola's tenuto marcato F \sharp 6 in harmonics prepares the high tessitura of Block 6. Filling the space between these two tones is tenuto pizzicato B \flat 5. All three tones in Block 4 are synchronous, reinforcing their cohesive function and timbral fusion. Just as Block 3 bridges Blocks 1 and 5 in the *am Steg/staccato* line, Block 4 links Block 1 to Block 6 in *not-am Steg/legato* line. In m. 4, pizzicato recalls that timbre in the viola in m. 1, and the arco harmonic connects forward to the harmonics in the first violin (mm. 5–8). Tenuto articulations bridge registral extremes between Blocks 1 and 6 and within Block 1 (Viola, mm. 1–2). Whether through slurred bowings or the extension intrinsic in tenuto markings, the *not-am Steg/legato* line's articulations imply a connectedness that contrasts with separation inherent in the *am Steg/staccato* line.

[4.6] Connecting the *am Steg/staccato* timbral progression through the work helps unveil a coherent second aggregate. The form that emerges from this timbral reading of the work is a binary AB structure. Webern elides the B section with the A section by creating a type of symmetrical reflection between the end of the first aggregate (A section) and the beginning of the second (B section): the final two tones of the first formal section (Violin II arco A \sharp 3–D \sharp 4) are reframed enharmonically in retrograde in a new timbral voice (Violin I *am Steg* E \flat 5–A \sharp 6). The second formal unit becomes recognizable through the *am Steg/staccato* line. Only Block 7 (Violin II and Viola in m. 7) remains unaccounted for (**Example 9**). It can be viewed as a coda, augmenting the form to become ABc (seen at the bottom of Examples 5 and 8). Fitting for a conclusory statement, Block 7 combines articulation-based aspects of the work's two timbral lines—pizzicato staccato and pizzicato tenuto—into a cohesive gesture. Its pitch content is consistent with the rest of the work, comprising a tetrachord of semitonal pairs: [G \sharp 3 A \flat 3 A \sharp 4 B \flat 4]. Moreover, the coda expands

registral space, offering a confirmation of the timbral lines through a reflection of their overall shape (**Example 10**). Throughout the Fourth Bagatelle, the timbral progressions Webern composes provide a layer of organization in the music. Cohesive timbral lines are cemented by the compelling connections of their timbral linkages, articulation styles, elements of repetition, and crossing design. In a complex multilayered web, Webern uses multiple parameters both to join and to distinguish. Timbre does not replace pitch as the sole organizing principle; rather, timbres help to organize the pitches they contain, and the work's two aggregates become clear.

5. *Op. 9, No. 5*

[5.1] Having seen how timbre can help structure pitch, we turn to how it contributes to symmetry. Analytical investigations of symmetry in Webern's music are plentiful.⁽²⁰⁾ As Kathryn Bailey (1991, 41) notes, Webern's predilection for symmetrical constructions and their concealment are a vital part of his musical language. There are many kinds of symmetry in music. Types of pitch symmetry such as inversional or transpositional are often considered, but that does not preclude symmetrical constructions being composed of other parameters such as timbre or rhythm. In his study of Webern's op. 11, Robert Clifford finds evidence of "Webern's attention to symmetry, not so much in the pitch selection or aggregate groupings that many analysts have already noted, but rather in the registral dimensions and rhythmic placement of the musical events themselves" (2002, 199). Incorporating Clifford's willingness to engage with symmetry outside traditional pitch approaches with Benjamin K. Davies' (2007) insightful analytical approach of chromatic wedges allows us to come to a new understanding of how symmetry operates in Webern's music. According to Davies, "Chromatic wedges do not form the material of op. 9 in any thematic or motivic sense. Rather, they are employed in what might be termed the structuring of tonal space: in short, they serve to configure the pitch-register field within which fully articulated textures coalesce" (29). He notes, "[A wedge] establishes connections, affinities, or latent symmetries that can be articulated or exploited in a variety of ways" (42). Of course, Davies has a traditional notion of pitch in mind, but since pitches are contained within timbres, this line of thinking can be extended to include the totality of the tone.

[5.2] Wedges are related to inversional symmetry, but they are not the same. In wedges, lines extend from or converge in a vertex—the point at which two or more lines, facets, or planes meet. Vertices bear resemblance to axes of symmetry, around which bodies rotate, but the two are not synonymous as wedges are not necessarily symmetrical. For instance, Wedge 1 in **Example 11** is symmetrical about axis P, while Wedge 2 is not symmetrical about axis Q. Inherent in the two-dimensional wedges employed in music analysis is some sort of height differentiation in relation to the vertex. Of course, pitch height in reference to an axis of inversional symmetry is often employed. But since pitch-in-register is an aspect of timbre, there is also a registral-height dimension of timbre that allows for it to become a compositionally salient characteristic of wedge components through expanding or contracting registral manipulation of timbral pairs. As will be shown in the Fifth Bagatelle's wedge expansions and contractions, Webern largely maintains timbral similarity between corresponding points, or transversal wedge pairs. (In geometry, a transversal is a line that intersects at least two other lines.) As used here, a *transversal wedge pairing* is the correspondence of two musical events that create an analytical coupling on opposite lines extending from or converging in a vertex. For instance, in **Example 12** points B and C make a transversal wedge pairing, as do points D and E. Transversal pairings may be created through any musical parameter. They may be inversionally symmetrical through pitch, but they may also contain asymmetric pitch content if paired through other compositional means.

[5.3] As can be seen from an overview of the Fifth Bagatelle, timbral progressions—produced by *am Steg*, arco, and pizzicato—elucidate wedge constructions throughout the music (**Example 13**). Globally, there is a trajectory from containment to escape. Timbral lines create nested wedges that delineate the form and provide an avenue for comprehensibility in the music. The *am Steg* timbre traces two expanding wedges, the first symmetric, the second asymmetric. The two *am Steg* lines coincide with the formal divisions of the piece, and thus are called the *am Steg A* and *am Steg A'* lines. They are not a background, but they are the most consistent aural reference and have the

narrowest range. The *am Steg* A line begins in m. 1 with C⁴ in the viola and E⁴ in the cello and culminates in mm. 6–7 with G⁴ in the cello and A³ in the first violin. The *am Steg* A' line begins in m. 8 with E⁴; *am Steg* C⁴ is delayed until m. 9. The arco line begins within the space outlined by the *am Steg* A line in m. 1 with C⁴-D⁴. Passing through the emphasized C⁵-A^{b4}-B^{b4} (mm. 5–7), the trajectory of its upper wedge line arrives at C⁵ in m. 9. Meanwhile, the arco line's lower trajectory exceeds the depths of the first *am Steg* wedge by a whole tone with its arco G³ in m. 7. The arco line's wedge is asymmetric. Yet on its path of expansion, the arco line maintains aspects of symmetry by contributing transversal wedge pairs to the chromatic wedge of the *am Steg* A line. The arco line does not coincide with formal divisions or large-scale architecture the way the *am Steg* and pizzicato lines do; instead it contributes to those other lines. Extending the theme of escape from containment, the first of two pizzicato lines begins with D⁴—the vertex tone within the arco line's opening C⁴-D⁴. Over the course of the work, the D⁴ pizzicato line breaks out from the arco line's enclosure of it and traces the music's largest registral expansion. The pizzicato line's D³ (m. 9) and C³ (m. 13) are the lowest tones of the work; while in the upper range, the viola's ultimate pizzicato D⁵ (m. 13) rises higher than the cello's arco C⁵ (m. 9). From its starting place contained within the arco and *am Steg* A lines, at the end of the work the D⁴ pizzicato line encircles them both. A second pizzicato line emerges with a vertex on B³. As the symmetry of the varied repeat in the *am Steg* A' line breaks down, the B³ pizzicato line provides additional structure at the conclusion of the work.

[5.4] Moving to a more fine-grained analytical approach, the timbral lines and the wedges they articulate elucidate the connections, affinities, and symmetries of Webern's musical logic. Bagatelle no. 5 unfolds in a monophonic block topography comprised of seven musical blocks (**Example 14**). Each block contains a complete aphoristic musical phrase consisting of a timbral idea, dynamic swell, and a unique tetrachord-based pitch construct. The result is a series of audibly distinct phrases presented sequentially, each expanding or contracting from the previous block.

[5.5] **Block 1** (m. 1) establishes the foundation of the piece's compositional strategy by encapsulating the arco melodic statement C⁴-D⁴ within its outward chromatic neighbors played at the bridge (*am Steg*) (**Example 15**). The timbres segregate into textural layers, with the pure arco timbre contained within a shell of noise. A dynamic swell imparts an arch shape, providing a sense of trajectory and completion in the aphoristic phrase. In the *am Steg* pairing of cello and viola, we see the reversal of traditional instrumental roles with the larger instrument playing the higher-pitched tone. The subtle manipulation of timbre in the registral role reversal is an orchestrational technique that can accentuate tones played in the upper or lower extremities of an instrument's range. It is a hallmark of Webern's orchestrational style that will reappear throughout the work. Here, the reversal highlights the cello's *am Steg* E⁴. Block 1 offers the tetrachord [C⁴ C⁴ D⁴ E⁴], establishing the familiar pitch construct of two semitonal pairs and helping to prepare the vertex tone on the absent D⁴.

[5.6] **Block 2** (mm. 2–4.2) immediately provides the work's vertex tone: the pizzicato D⁴ in Violin I (**Example 16**). After the silence that precedes it, the vertex tone's isolation marks it as a salient moment. Block 2 implies a homophonic texture, with the pizzicato of Violin I foregrounded over tremolo at the bridge in Violin II and Viola. The pizzicato and the tremolo *am Steg* timbres maintain their textural stratification through timbral dissimilarity and asynchronous onsets. But Webern smooths the entrance of the tremolo *am Steg* through increasing the dynamic level of the pizzicato with the onset of the second timbre. As with the first phrase, the dynamic wave imparts an arch-like structure.

[5.7] **Block 3** (mm. 4.2–5) is entirely in arco, the only block in the work in a single timbral profile (**Example 17**). At first, the arco line contributes to the *am Steg* A line's chromatic expansion through F⁴ (Violin II) and B³ (Cello). Block 2 prepared this expansion, but its pizzicato F⁴ (Violin I) and *am Steg* B³ (Viola) are not timbrally paired. With the repetition of both pitches in arco, the timbral confirmation restarts the wedge expansion in earnest. The expansion continues chromatically with the G^{b4}-B^{b3} arco double stop in the first violin (mm. 4–5). Then, Block 3 highlights the arco C⁵ (Viola) which is the first accentuated tone since the pizzicato vertex. This tone has added emphasis as it rings out above the rest of the phrase as the highpoint. Coming on the heels of pizzicato and

tremolo *am Steg*, comparatively, the pure arco tones soar with clarity even though they are still muted. Not only is C \sharp 5 the highest tone of the block, but Webern assigns it to the viola, calling forth a more strident timbre from the instrument's upper register compared to the tones assigned to the violins, which are in a lower register on their respective instruments. This timbral highlight is supported by the block's dynamic swell. Furthermore, the intensity of the cello's F \sharp 4 is diminished through its decrescendo, and the *sehr zart* (very tender or soft) marking indicates the player should expressively minimize the tone's brilliance. Webern emphasizes the arco C \sharp 5 in m. 5 through refined dynamic and timbral control. Brian Ferneyhough calls this type of separation "timbral alienation" (1995, 171). The outlying C \sharp 5 bifurcates the arco line's allegiance. Rather than contributing to the *am Steg* A line, this rapid escalation of register situates it with D \sharp 4 pizzicato line going forward.

[5.8] **Block 4** (mm. 6–7) continues the timbral emphasis of the arco line and concludes the first formal unit with the final expansion of the *am Steg* A Line (**Example 18**). The most salient feature of Block 4 is the viola's arco A \flat 4-B \flat 4 slur which imparts a teleological sense of completion with its upward inflection reinforced by crescendos that drive the trajectory forward. The arco B \flat 4 in the viola (m. 7) seems to carry cadential weight. Supporting the arco line, the *am Steg* A line reaches its completion with G \sharp 4 in the cello (m. 6) and A \sharp 3 in the first violin (m. 7) (**Example 19**). Timbre, texture, dynamics, articulation, and the subsequent post-phrase silence point to a segmental boundary after the completion of m. 7. Underpinning this formal division, Block 4 offers a timbral inversion of Block 1 with arco timbres registrally encapsulating *am Steg*. Block 4 also signals a change in formal outline fortifying the phrase's closure by varying the dynamic blueprint. Instead of the crescendo-decrescendo pattern established by each phrase thus far, the design is reversed to emphasize the teleological goal with additional force. Through the first half of the work, there is a sense of a foreground-background textural relationship (shown with the highlight boxes in Blocks 1–4, Examples 14–18). After the formal division, the textural layers become more co-equal.

[5.9] Here, we see the first divergence between a pitch-based reading of the form and one that accounts for timbre. An understanding of form based on pitch class and chromatic aggregates alone necessitates locating a formal division after the downbeat of m. 7. There are only two B \flat s in the work (Violin I mm. 4.4–5 and Viola m. 7.4), and they both occur before the segmental boundary created by the end of the phrase and subsequent rests. In a strict reading of the form based on pitch aggregates, the viola's arco B \flat 4 (m. 7.4) must be part of the second formal unit. Therefore, the formal division would occur after the twelfth tone in the work's first chromatic aggregate is sounded with the A \sharp 3 (m. 7.1), and the second formal unit would begin with G \sharp 3 in the second violin (m. 7.2) (seen at the bottom of Example 14). This pitch reading is in conflict with the sounded music as notated. The viola's arco slur and the crescendos in three members of the quartet indicate the phrase's continuation to the end of m. 7. From a timbral perspective, the formal segment ends with the completion of the phrase at the end of Block 4 and its subsequent separation from Block 5 with rests in all four instruments.

[5.10] Block 5 (mm. 8–10) contains the most striking timbral event in the work—the ascending pizzicato glissando culminating in a sustained arco tone (m. 9)—but more than that, **Blocks 5–6** recapitulate Blocks 1–4 in a varied repeat of the A section (**Example 20**). Bagatelle no. 5 makes use of an AA' binary structure, rather than an AB pattern. In restarting the formal unit, Webern repeats nearly every element of the work's beginning. The unique pizzicato D \sharp 3 glissando to arco C \sharp 5 in the cello (m. 9) corresponds to the pizzicato D \sharp 4 (m. 2) and arco C \sharp 4 (m.1), now registrally transferred as part of the timbral-registral expansion of the D \sharp 4 pizzicato and arco lines respectively. The glissando gesture nearly spans the work's entire range, short only by a semitone at both extremities. Reminiscent of arco's flight from the containment of *am Steg* beginning in the first measure, the *am Steg* A' line begins with tones bordered by their outward chromatic neighbors in pizzicato. The first sounded tone in m. 8 is the *am Steg* E \sharp 4 in the viola, corresponding to the cello in m. 1. Its *am Steg* C \sharp 4 transversal pairing is metrically displaced, coming in mm. 9–10 in the second violin, yet still preserving the inverted instrumental roles from the beginning. Paralleling this metric displacement, the pizzicato F \sharp 4 and B \flat 3 transversal pairing follows in step, first one triplet-eighth rest behind it, then two triplet-eighth rests. There is symmetry within *am Steg* A' line with E \sharp 4 ascending to G \sharp 4 (m. 12) and E \flat 4 descending to C \sharp 4 (mm. 9–10), a movement of three

semitones in each direction. But the wedge outlined by this line is asymmetric, beginning with the chromatic neighbors E[♯]4 (Violin II) and E[♭]4 (Viola) in m. 9 and culminating in E[♭]4 (Violin I) and E[♯]3 (Cello) in m. 13. As the symmetry of the *am Steg* A' line breaks down, that of the B[♯]3 pizzicato line replaces it.

[5.11] Throughout the entire piece, only one tone is repeated in succession: the pizzicato B[♯]3 in the viola in mm. 9–10. Its repetition marks it as an important moment, and it becomes the vertex of a new pizzicato line that unfolds layers of both simultaneous and successive timbral symmetry. The wedge trajectories commence immediately with the simultaneous pizzicato tones in m. 11 and conclude with the final expansion of timbral-registral space in m. 13 (**Example 21**). Trading partners in a dance of metrically offset transversal pairs, the timbral symmetry is extended linearly. After the prominent repetition, the next pizzicato tones in the viola are A[♯]4 (m. 11) and C[♯]3 (m. 13), both ten semitones from the vertex. Then, the final pizzicato D[♯]5 is balanced by pizzicato G[♯]3 (the temporal partner of the pizzicato A[♯]4 in m. 11), both fifteen semitones away. The timbral pairings support B[♯]3 as an axis of symmetry in inversional timbral-registral space.⁽²¹⁾

[5.12] **Block 7** (m. 13) offers the final expansion of the timbral lines and reiterates the foundational material of the movement, recalling the opening of both the A and A' sections (**Example 22**). The block's timbres are distributed in an alternating pattern:

- D[♯]5 pizzicato (Viola)
- E[♭]4 *am Steg* (Violin I)
- B[♯]3 pizzicato (Violin II)
- E[♯]3 *am Steg* (Cello)
- C[♯]3 pizzicato (Viola)

The viola's pizzicato C[♯]3 and D[♯]5 are the ultimate termini of both the D[♯]4 and B[♯]3 pizzicato lines, merging the two lines (Example 13). The final pizzicato D[♯]5 recalls the prominent pizzicato D[♯]4 (m. 2) at the beginning of the A section and pizzicato D[♯]3 (m. 9) after the formal restart. The central pizzicato B[♯]3 reprises the second pizzicato line's vertex and echoes the layers of symmetry in the work's conclusion. The final *am Steg* tones complete the A' line and reiterate the openings of both the A (m. 1) and A' (m. 8) *am Steg* lines.

[5.13] In this *Klangfarbenmelodie* work, timbral lines impart coherence and comprehensibility. The D[♯]4 pizzicato line illustrates the work's overall trajectory and maps onto the widest registral expansion of op. 9, no. 5. Meanwhile, the *am Steg* lines coincide with the work's formal segmentation. The arco line and the B[♯]3 pizzicato line offer support for the other lines, as well as provide shape and goal-directed motion to the work. From arco timbres escaping from their encapsulation within those of *am Steg*, to the sounds of pizzicato's exodus from its containment between arco tones, Bagatelle no. 5 expands timbral-registral space through inversionally symmetrical timbral trajectories. The binary musical form (AA') that emerges from this analysis incorporates both timbre and pitch aggregates. Webern's notated segmentation and the recapitulation of material in the varied repeat are too powerful to ignore. In both Bagatelles nos. 4 and 5, the pitch aggregates alone seem less analytically salient than the combined forces of timbre, musical phrasing, and moments of silence.⁽²²⁾ The chromatic aggregates are akin to a blank canvas stretched across a frame, waiting for the artist's paint. Rendered upon that structure are timbres and the pitches they contain, and it is these swells of sound that make the music understandable as a form.

6. *Op. 10, No. 1*

[6.1] In addition to the inversional symmetry explored through Bagatelle no. 5, timbre informs retrograde symmetry in Webern's music. The First Orchestral Piece of Webern's *5 Stücke für Orchester*, op. 10, provides an excellent example—its form is symmetrical, articulated by timbre, and defined around the timbral axis of the trumpet and trombone brass choir in mm. 6–7.

Beginning in the middle facilitates an understanding of Webern's timbral palindrome. Expanding outward from the form's axis, the structural timbres on either side are: cello in mm. 7–8 and 6; violin in mm. 7–10 and 4–5; flutter-tongue flute in m. 8–9 mirroring the flute combined with the celesta trill in mm. 4–5; glockenspiel in mm. 9 and 2; harp in mm. 9 and 1; celesta augmented with bowed string harmonics in mm. 10 and 1; harp in harmonics in mm. 10–11 and 1; and the harp in m. 10 along with the trumpet in m. 12 mirroring harp combined with trumpet in the anacrusis (**Example 23**). The strings and brass instruments are muted throughout.

[6.2] Exploring the work by expanding outward from the axis unveils multiple layers of symmetry. The work's six musical blocks unfold in a polyphonic topography (**Example 24**). As usual, the blocks are numbered in order of their appearance; the block numbers themselves do not relate to the symmetrical unfolding. **Block 5** is the brass-choir axis of the work's symmetrical form (mm. 6–7). **Block 3** consists of clarinet in mm. 3–6, cello in mm. 7–8, and violin in mm. 7–10 along with glockenspiel's G[♯]7 in m. 9. The glockenspiel's G[♯]7 in m. 9 augments the violin's simultaneous G[♯]6 because of their synchronous onsets, octave doubling, and timbral affinity. **Block 4** (mm. 4–7) consists of flute in regular tonguing, harp, violin, and viola unified by their shared articulation and synchronous onsets, as well as cello, which mirrors the accented articulations. Both blocks cohere through dynamic shaping, phrasing, and articulation patterns. Though Block 3 enters first, it is more heavily weighted with musical activity after the work's axis. Block 4 takes place before the axis and balances the post-axis activity of Block 3. The cello, Webern's own instrument, holds a special place in the piece. Borrowing articulation patterns, it bridges timbral blocks to create organic unity within variety. The cello's accented tones in m. 6 connect back to the violin and viola and their synchronous onsets with the rest of Block 4. Then, the cello's long-short pattern of slurred legato tones in mm. 7–8 link those of the clarinet and violin in Block 3. Bridging Blocks 3–4, the cello also participates in unfolding the symmetrical form by sounding immediately on either side of the timbral axis in m. 6 and mm. 7–8. The violin also creates a layer of symmetry around the brass choir in Blocks 3–4. It sounds in mm. 5–6 and 7–10, though the symmetry is less obvious because of the violin's participation in a "chord" in Block 4.

[6.3] **Blocks 1, 2, and 6** form a monophonic chain that creates the main timbral line of the work and contains many of the form-bearing symmetrical partners. Continuing with the outward expansion, on either side of the cello (mm. 6 and 7–8) and violin (mm. 4–5 and 7–10), flutter-tongue flute and flute combined with celesta trill. This is the only instance where Webern does not use a direct timbral pairing. Instead, he employs timbral imitation. The combination of flute and celesta trill (mm. 4–5) emulates the timbre of flutter-tongue flute (mm. 8–9). The palindromic mirroring continues with the direct timbral pairings mentioned above ([6.0]). Only the glockenspiel's augmentation of the violin (m. 9) rests outside the main line. Within this timbral line, each block is formally segmented by rests, resulting in an introduction, body, and coda. All three sections share a group of instrumental timbres and articulation techniques that promote coherence across the movement. The introduction (**Block 1**) is the opening B[♯]4–C[♯]5 in the first beat of m. 1 and its anacrusis (**Example 25**). Rather than blending to create emergent timbres, each constituent tone color retains its individuality and goes on to play a foundational role in the structure of the movement. The trumpet will sound again as part of the symmetrical form's axis as well as in the coda. The harp is used structurally by itself as well as in combination with other instruments; it is often the medium to which other timbres are added.⁽²³⁾ Its harmonic articulation unites it with that of the viola, and there is an affinity between the timbral qualities of the harp and those of muted trumpet staccato, muted bowed string harmonics, and the celesta. The body (**Block 2**) of the work begins with the harp and flutter-tongue flute's B[♯]4 in the latter half of m. 1 (**Example 26**). The timbral qualities that bind the introduction also create coherence in the main line's body. Block 2 forms the bulk of the main line. It is not precisely a background or substrate; rather, it frames the rest of the music and provides a reference for the echelons of sound layered upon it. As a textural layer, the main line forms the foundational stratum of the music. The coda (**Block 6**) in m. 12 employs timbres found grouped together throughout Blocks 1 and 2 (**Example 27**). Flute, trumpet, and celesta are linked throughout the piece. The repetition of these timbral progressions reinforces their coherence as a group.

[6.4] The pitch content of op. 10, no. 1 reinforces the work's symmetry and segmentation into blocks. Perhaps most obvious, the introduction and coda highlight B[♯] and F[♯] respectively, a symmetrical tritone apart. Veiled as it may be, Webern also provides the structural tritone at the formal axis. F[♯] is present in both instrumental lines in Block 5 flanked by B[♯]3 in Block 3 in the clarinet (m. 6) and cello (m. 7). There is one complete aggregate of chromatic saturation in the work, but nothing indicates that it bears compositional weight; in effect, the aggregate is incidental. Particularly noteworthy, however, is that the musical blocks that cohere through timbre are also composed of sets of nine of the twelve tones (**Example 28**). Blocks 2 and 3 each contain a nonachord, while the pitches within Blocks 4 and 5 together combine to make one. There does not appear to be a clear relationship established between the included or missing tones of each nonachord. However, each grouping reinforces the segmentations made based on instrumental timbre, articulation, and phrasing. The unity established between the timbre and pitch domains strengthens them both.

7. *Op. 10, No. 4*

[7.1] In addition to considering timbral progressions in the above works, thus far the analyses in this study have explored how timbre structures pitch (op. 9, no. 4), inversional symmetry (op. 9, no. 5), and retrograde symmetry (op. 10, no. 1). Lastly, we will explore timbre as a way of structuring gesture and theme. In his analysis of op. 11, no. 1, Clifford posits that "the shape of an established gesture took precedence over, and even influenced, Webern's choice of specific pitches or register for a given chord or melody" (2002, 210). Neither Clifford nor I ignore pitch in our analyses, but the addition of timbre as a parameter that can structure gesture and shape enriches analytical possibilities. Clifford concludes by suggesting op. 11, no. 1 may have been "an early working out of another type of symmetrical compositional technique, not of pitches or palindromes, but of gestures and shapes" (211). Extending this line of thought, the notion of timbre structuring gesture, and in turn theme, can be seen in *Orchestral Piece no. 4*, op. 10. *Opus 10, no. 4* is only six measures long, yet it has provided fertile analytical ground for generations of scholars.⁽²⁴⁾ As abstract as the piece may seem, it is actually one of Webern's most "old-fashioned" aphoristic works. It combines a clearly stratified homophonic texture with Webern's typical symmetrical language. The form is binary with a short introduction (iAB). Through timbral similarity and dissimilarity, the work neatly partitions into formal segments and textural foreground and background in a homophonic block topography (**Example 29**).

[7.2] **Blocks 1 and 2** (the anacrusis and m. 1) form the introduction. The mandolin provides the melody with the harp in accompaniment. Immediately, Webern establishes a melodic contour of two ascending dyads followed by a descending dyad. Viewing this "up-up-down" gesture as the primary thematic element of the piece, the mandolin's melody is echoed in the foreground of each subsequent homophonic grouping. **Blocks 3 and 4** (mm. 2–4) constitute the A section. The melody is in the trumpet and trombone (both muted), while the muted viola harmonic and clarinet carry the accompaniment. In Block 4, the trumpet has the up-up-, and the trombone answers with the -down. The up-up-down melody integrates as a musical block through timbral similarity, reinforced by repetition of the thematic gesture. Timbral dissimilarity segregates the brass instruments from their accompaniment in Block 3. In the background, the clarinet's A[♯]4 and viola's harmonic B^b5 are both the prolongation of single tones and are further linked through shared dynamic shaping. Momentarily skipping discussion of Block 5, **Blocks 6 and 7** (mm. 5–6) are the B section of the form. The muted violin carries the thematic gesture, accompanied by the repeated tones throughout the rest of the chamber orchestra. Webern reverses the contour of the melody, creating a responsive statement and a sense of closure. The resulting down-down-up gesture in the violin is foreshortened from six tones to five, quickening of the compositional pace. Again, the accompanying timbres each prolong a single tone (or dyad in the case of the celesta in m. 5). Throughout each iteration of the thematic gesture, timbre makes the melodic statements cohere and stratifies the melody and the accompaniment into distinct textural layers.

[7.3] Returning to **Block 5**, the snare drum in m. 4 is the transition between the A and B sections and the only sound of indefinite pitch in the work. The A section is separated from the introduction

by an eighth rest, and it is clearly partitioned from the B section with the same value. Only the sound of the snare drum penetrates the silence. Though not symmetrical in form, there are elements of retrograde timbral symmetry in *Orchestral Piece no. 4*. On either side of the snare drum axis are harp joined with mandolin, clarinet, and a solo string, though the symmetry is inexact with violin in its upper register mirroring viola harmonics (**Example 30**). The only non-direct pairing of timbres is the celesta matched to the brass instruments. Even though the form is not defined by these symmetrical timbres, the timbral pairings are consistent with Webern's technique in op. 10, no. 1. Reinforcing Webern's consistency in compositional language, the registers of *Orchestral Piece no. 4*'s textural layers cross, similar to the timbral progressions of *Bagatelle no. 4* (**Example 31**). In mm. 2–4, the melody in the brass is registrally below the accompaniment of clarinet and string harmonics. Then, in mm. 5–6, the melody in the violin is in the traditional upper voice above an accompaniment in a lower register. Though symmetry appears not be the main compositional strategy here, the symmetrical timbral features are consistent with Webern's musical language.

[7.4] As in *Orchestral Piece no. 1*, here in no. 4, pitch nonachords reinforce the structures defined by timbre. Some previous analyses have focused on the hexachord created by the first three mandolin tones and the trichord in the harp to extrapolate structural formations.⁽²⁵⁾ However, that approach does not consider the work's notated phrasing. The continuation of the mandolin line to its completion yields the more cohesive nonachord as the pitch unit.⁽²⁶⁾ Each of the three homophonic combinations of blocks (Blocks 1–2, 3–4, and 6–7) is assigned a unique nine-tone grouping. Furthermore, the stratified foreground (Blocks 1, 4, 7) and background (Blocks 2, 3, 6) layers each contain a collection of nine tones as well (**Example 32**). The harp's harmonic tone in mm. 4–5 is unique in this work. It streams texturally and timbrally with Block 6, but its pitch, F#5, is part of the Blocks 3–4 nonachord. In tonal analysis, the hegemony of harmony may subjugate timbre to its purposes. But here, timbre is emancipated from pitch and can function independently. Similar to a pivot chord that functions in two keys during a modulation, the F#5 harp harmonic functions in two organizational groupings. The pitch serves the nonachord of Blocks 3–4 while the timbre serves the homophonic accompaniment in Blocks 6–7. Its metric location supports its dual function. Both the harp and the trombone overlap the snare drum transition (m. 4), allowing them to be linked. In this way, the onset of the harp's harmonic F#5 is part of the Blocks 3–4 nonachord, and its continuation in a stream of repeated tones aligns its timbre with Block 6. Of course, the participation of the harp's F#5 in Blocks 3–4 and 6–7 is independent of it also belonging to the textural background that stretches across the work.

[7.5] Pitch and timbre buttress each other. The nonachords reinforce the timbral groupings and textural stratifications that create the musical blocks. Structure is communicated through timbral and textural stratification and segmentation, with phrasing, dynamic shaping, and rests clearly demarcating transitional points. In this *Klangfarbenmelodie* music, gestural shape, timbre, and registral distribution logically convey the presentation of musical ideas.

8. Conclusions

[8.1] Webern's *Six Bagatelles for String Quartet*, op. 9, and *5 Orchestral Pieces*, op. 10, show the organization of timbral lines (*Klangfarbenfolgen*) into music structured through timbre (*Klangfarbenmelodie*). These works demonstrate that well-defined forms, symmetry, musical ideas like expansion and contraction, and lucid textures are all consistent aspects of the composer's *Klangfarbenmelodie* works. Bailey calls Webern's opp. 9 and 10 the "epitome of musical aphorism as it is generally understood—those wisps of music in which one ephemeral gesture follows another for no very apparent reason" (1997, 85). When examined through the lens of *Klangfarbenmelodie*, however, Webern's ephemeral wisps convey well-articulated musical ideas. This article offers a new way to consider the interaction of timbre and pitch. Both of these aspects of the musical tone are capable of being the basis for musical logic. Pitch can be considered independently, as in traditional analytical approaches, or for its contributions to timbre as part of the totality of the musical tone. In some instances, readings of timbre and pitch reinforce and strengthen one another, and in others they offer evidence of conflicting interpretations. In both cases, Webern's works

explore some of the possibilities of timbre as a medium for artistic expression. With them, Webern takes concrete steps on *Klangfarbenmelodie*'s path to new music.

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Footnotes

* I would like to thank my two MTO reviewers, Jennifer Iverson and Joseph N. Straus, whose editorial comments led me to a stronger version of this article. I would also like to thank Robert Hasegawa, Stephen McAdams, Philip Rupprecht, and R. Larry Todd for providing feedback on early drafts of this article, as well as Mitch Ohriner and the MTO editorial team for initiating the non-anonymous collaborative review pilot program. This work was supported by the Analysis, Creation, and Teaching of Orchestration (ACTOR) partnership at McGill University, funded by the Canadian Social Sciences and Humanities Research Council (#895-2018-1023).

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1. Among others discussed below, previous analyses of Webern's opp. 9 and 10 include those by Busch (1985–86a, 1985–86b, 1985–86c), Forte 1998, Haimo 1996, Johnson 1978, Lewin 1993, and Sallmen 2003.

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2. I thank Thomas Ahrend for assisting in the transcription of Webern's letter to Schoenberg of August 23, 1911 (Arnold Schönberg Center, 21866). Ahrend also suggests that "auf ~~1/16~~, ~~1/32~~ Sechzehntel, Zweiunddreißigstel" may refer to an underlying beat rather than specific note durations as translated by Moldenhauer but finds both translations possible (email to author, April 3, 2021).

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3. Webern had not yet begun op. 9, no. 1 and 6 in May of 1913; those two movements were composed sometime between June 3 and July 10, 1913.

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4. "Schönberg gefällt mein Aufsatz über ihn sehr. Ebenso meine neuen Kompositionen. Er hatte einen großen Eindruck davon. Er will sogar darüber etwas schreiben. Er meint das sei ja eigentlich schon eine Melodie der Klangfarben! Ich bin glücklich!" Translation mine.

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5. Both opp. 9 and 10 have complicated gestations. Webern had begun op. 9/2–5 by August 7, 1911 and all four movements were complete by August 23, 1911 (Moldenhauer 1979, 190–96). Opus 9/1 and 6 were composed June 3–July 10, 1913. Opus 10/1 was completed on June 28, 1911 and op. 10/4 was completed on July 19, 1911. Opus 10/2–3 and 5 were composed September 6–October 10, 1913. Webern composed at least eighteen short orchestral movements during 1911–13, eleven of which are published: five as op. 10 (1911–13; Universal Edition, 1923), five as *Orchestra Pieces*, op. Posthumous (1913; Carl Fischer, 1971), and "O sanftes Glühn der Berge," which became no. 3 of the *Three Orchestral Songs* (1913–14; Carl Fischer, 1968).

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6. For example, the offstage oboe at the beginning of the third movement of Hector Berlioz's *Symphonie fantastique* (1830) has a different timbre than when it returns to the stage.

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7. "Am Klang werden drei Eigenschaften erkannt: seine Höhe, Farbe und Stärke. . . .der Ton macht sich bemerkbar durch die Klangfarbe, deren eine Dimension die Klanghöhe ist. Die Klangfarbe ist also das große Gebiet, ein Bezirk davon die Klanghöhe. Die Klanghöhe ist nichts anderes als Klangfarbe, gemessen in einer Richtung." (Schönberg 1911, 470–71)

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8. ". . . schreiben aber unbekümmert *Klangfarbenfolgen*, die sich doch mit dem Schönheitsgefühl irgendwie auseinandersetzen" (Schoenberg 1911, 471).

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9. "Welches System liegt diesen Folgen zugrunde?" (Schoenberg 1911, 471)

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10. Carter renders "melodies" in scare quotes in the second line; however, they are not in the original German. "Ist es nun möglich, aus Klangfarben, die sich der Höhe nach unterscheiden, Gebilde entstehen zu lassen, die wir Melodien nennen, Folgen, deren Zusammenhang eine gedankenähnliche Wirkung hervorrufen, dann muß es auch möglich sein, aus den Klangfarben der anderen Dimension, aus dem, was wir schlechtweg Klangfarbe nennen, solche Folgen herzustellen, deren Beziehung untereinander mit einer Art Logik wirkt, ganz äquivalent jener Logik, die uns bei der Melodie der Klanghöhen genügt." (Schoenberg 1911, 471)

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11. A full exploration of the multifaceted meaning of *Klangfarbenmelodie* is outside the scope of this article. For a discussion of *Klangfarbenmelodie* as a concept as well as its implications as an organizational principle on the style of musical presentation, texture, and potential types of musical logic employed, one might consider my manuscript in preparation, "*Klangfarbenmelodie*, Style, and Idea: Timbral Function in Music." For an early version of this work see [Zeller 2020](#).

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12. Block topography bears resemblance to Kathryn Bailey's (1991, 30–93) topographical arrangement of tone rows in dodecaphony. Row topography is a way of describing how tone rows are put together in the musical texture. Bailey lays out two types of row topography. What she calls "block [row] topography" and "linear [row] topography" are roughly analogous to monophonic block topography and polyphonic block topography, respectively (31).

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13. On auditory chunking see, for example, [Bregman 1990](#) and [McAdams 2019b](#). For examples of the array of factors that may govern musical segmentation, see [Hasty 1981](#) and [Hanninen 2012](#).

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14. For detailed discussions of bowed string acoustics see [Hutchins 1997](#).

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15. As pitch-class sets, these tetrachords have the TC-property (See [Cohn 1988](#), esp. 23–28 and [Straus 2014](#)); see Lambert (2000) for a discussion of this type of tetrachord in Webern's op. 11.

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16. If forming a hexachord with the first six tones of the work, a decision would have to be made between $C^{\sharp 5}$ and $D^{\flat 2}$ on the downbeat of m. 2.

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17. These are just a few of the possible pitch readings.

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18. Within this timbral reading of the first aggregate there are still a number of analytically attractive tetrachordal and hexachordal groupings available. For example, either of the latter two tetrachord groupings discussed above, or the hexachord sounded by the second violin (mm. 1–3) and, allowing for the repeated B^{\sharp} , its counterpart in the viola and cello (mm. 1–2).

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19. While 6:9:12 may be reduced to 2:3:4, the larger numerals reflect the actual division of rhythmic onsets per measure that Webern employs.

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20. For example, [Archibald 1972](#), [Bailey 1983, 1991, 1996](#), [Clifford 2002](#), [Davies 2007](#), and [Lewin 1993](#).

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21. Albeit slightly removed, retrospective reinterpretation adds one more layer of support for the $B^{\sharp 3}$ pizzicato line. Its vertex becomes the inversional axis of the successive pizzicato tones $A^{\flat 4}$ and $D^{\sharp 3}$ in the cello in mm. 7–9, both nine semitones from the vertex.

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22. This brings to mind Christopher Hasty's (1981) discussion of analytical domains in "Segmentation and Process in Post-Tonal Music."

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23. In this way, Webern's use of the harp in op. 10/1 is similar to the function it performs twenty-four years later in his arrangement of the *Fuga (Ricercata) a 6 voci, no. 2* from J. S. Bach's *The Musical Offering* BWV 1079 (1747).

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24. Notable analyses of Webern's op. 10, no. 4 include those by [Clifford 2005](#), [Delcambre-Monpoel 1998](#), [Deliè 1975](#), [Forte 1973, 1998](#), [Johnson 1978](#), [Lachenmann 2003](#), [Lewin 1993](#), and [Metzer 2006](#).

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25. Notably, [Lewin 1993](#) and [Forte 1973, 1998](#).

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26. Advancing from the first nonachord, a chromatic aggregate is completed with the first three tones of Blocks 3 and 4 ($A^{\sharp 4}$, $B^{\flat 5}$, $B^{\sharp 4}$). However, similar to the chromatic aggregate in the First Orchestral Piece, here it seems incidental.

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