

Three Audiovisual Correspondences in the Main Title for *Vertigo*

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<https://www.mtosmt.org/issues/mto.22.28.1/mto.22.28.1.murphy.php>

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ABSTRACT: Saul Bass and Bernard Herrmann provided the visuals and music, respectively, for the main title of Alfred Hitchcock's 1958 movie *Vertigo*. These artworks correspond with one another in three ways. First, when aligning two dimensions of visual and pitch brightness, a portion of each artwork moves through this two-dimensional space using a similar path. Second, when arranging some of the tonal materials onto a certain space, these materials transform into each other using transformations similar to those that animate some of the visual designs. Third, under partial enharmonic equivalence, these pitch spaces curl into a partly-closed and partly-open shape that closely resembles manipulated visual forms whose looped closure is partially obscured. The first and third ways shed significant light on the film's narrative, and the first way in particular parallels the film's central dramatic form.

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0. Outline of the Article

[0.1] Saul Bass and Bernard Herrmann provided the visuals and music, respectively, for the main title of Alfred Hitchcock's 1958 movie *Vertigo*. Much could be said about Bass's visuals, or Herrmann's music, or the following narrative of *Vertigo* independently from the others. However, the purpose of my article is to propose correspondences among these three artworks.

Section 1 of the article presents a notated harmonic and formal reduction of Herrmann's music and a summary of Bass's images for *Vertigo*'s main title. Section 2 lays out multiple invitations and rationales for locating correspondences between *Vertigo*'s main title music, main title visuals, and narrative, which include the relevance of the *Tonnetz*, a specific array of pitch classes that makes proximate the constituents of consonant harmonies. Section 3 shows, using a homology between visual and musical brightness, how one particular orientation of the *Tonnetz* is especially appropriate for the first part of Bass's main title. Section 4 argues that a progression of five of

Herrmann's chords through this specifically oriented *Tonnetz* matches Bass's camera motions in the first part of the main title. Section 5 contends that the way these five chords transform into others on this version of the *Tonnetz* matches those transformations that animate some of the visual designs used in the second part of the main title. Section 6 demonstrates how, under partial enharmonic equivalence, this *Tonnetz* curls into a partly-closed and partly-open shape that closely resembles Bass's manipulations of these same designs whose looped closure is partially obscured. Section 7 claims that the first and third correspondences—from Sections 1 and 3, respectively—illuminate elements of the film's narrative content and form. Section 8 offers a short metatheoretical afterthought.

1. *The Music and Visuals of Vertigo's Main Title*

[1.1] **Example 1** displays a harmonic reduction and formal analysis of Bernard Herrmann's main title music for *Vertigo*. This reduction lines up the chords with both the mensural notation of Herrmann's original manuscript score, from which the reduction was made, and the chronology of the movie, shown numerically above and below the reduction, respectively.⁽¹⁾ My atypical use of first and second endings, as well as the letters attached to chordal enumeration, convey a sense of the prelude's form: an A–B binary whose repetition is truncated, and with coda material labeled as C. The open noteheads provide a harmonic summary of this main title music, whereas solid noteheads synopsise melodic motion and thus show pitches that may not be in the concurrent chord. The pitch C5 is initially tangled up in the tripleted arpeggios, shown in **Example 2**, that appear on the top of the chords in the A and C sections, insinuating its chord-tone status. However, there are three good reasons to treat it as a non-chord tone, and for Example 1 to indicate all C5s accordingly with a solid notehead. First, it is the only note within the arpeggiations that is approached and left by step, as an upper neighbor to B♭ in particular. Second, the pair of melodic seconds D–C and E♭–D under chord A1a behaves like a double-neighbor figure prolonging D despite the octave displacement, reinforcing C as neighbor—albeit to D instead of B♭—and anticipating the prelude's conclusion on a tonic-resembling bass D.⁽²⁾ Third, this pitch is ultimately exterior to a common interpretation of the arpeggiated chord as a “Hitchcock chord,” a minor-major seventh chord that scholars recognize as a distinctive harmony in Herrmann's scores for Hitchcock's films.⁽³⁾ Since this four-note chord occurs throughout the A section, I will simply refer to this as the “A” chord, and append other characters when I single out a certain harmonic superset of this A chord.

[1.2] Bass's main title for *Vertigo* divides into two successive parts. The first part features a close-up of a woman's face, over which the camera moves among five different stations and five different degrees of zoom, ending with a shot of the woman's right eye that fills the frame. Loud brass statements of Herrmann's chords A1b, A2, A3, and A4 and four title credits—“JAMES STEWART,” “KIM NOVAK,” “IN ALFRED HITCHCOCK'S,” “VERTIGO”—punctuate the completion of motion to Stations 2 through 5 of Bass's camera, respectively. The second part of Bass's main title involves slowly enlarging curvilinear forms with contrasting colors and designs centered in the frame, most rotating as well. The entire main title with both image and music can be viewed and heard at <https://www.youtube.com/watch?v=Lvaahmgmz8w>.

2. *Motivations for Analyzing Vertigo's Audiovisual Correspondences*

[2.1] This article proposes three ways in which Herrmann's chord progressions and Bass's moving images for the main title parallel one another. These ways have value in a manner similar to the value of the corresponding audiovisual connections that I (2009) proposed for the main title collaboration between Herrmann and Bass for Hitchcock's movie *Psycho*, released two years after *Vertigo*. First, it suggests some degree of authorial influence, however abstract. According to Herrmann, Bass animated his titles to the composer's music for *Psycho*. Although the most comprehensive source on *Vertigo's* production (Auiler 2000) has no information about which came first and whether one influenced the other, another source (Karamath 2001) claims that “Herrmann later scor[ed] to Bass's visuals.” (45, 47) Second, as in my earlier study, these audiovisual

connections, working in synergistic combination, substantiate Herrmann's (1980, 132) claim for a main title's primary function to both "set the pulse" and "set the drama" for the movie that follows.⁽⁴⁾ I will propose that the first and third ways in which music and visuals correspond in *Vertigo's* main title shed significant light on the film's narrative, and the first way in particular parallels the film's central dramatic form. These three ways involve technical, even fastidious, analysis. This statement is more than a caveat: while the discipline of music theory in particular tends to tolerate such complex descriptions more than other disciplines, this degree of precision itself is also relevant to how I connect Herrmann's main title music to *Vertigo's* narrative, as explained at the end of my article.

[2.2] However, before presenting these ways and their dramatic implications, I would like to list five specific aspects in orbit around *Vertigo's* opening that motivate and corroborate the notion that the musical and the visual can closely correspond. In doing so, I wish to show that the very premise of an audiovisual analysis sympathetically resonates with an understanding of an especially close-knit relationship between sight and sound shared by both creators and receivers of *Vertigo's* artistry.

[2.2.1] Like many before and after him, the literary scholar Jack Sullivan hears how "*Vertigo* opens with triplets spiraling in contrary motion" (2006, 222). A cross-domain mapping between these triplets, notated in Example 2, and a visualization of spiraling or spinning, like that of the shapes used in the second part of Bass's main title, is at once quite natural and highly metaphorical. A projection of two-dimensional circular motion onto a single dimension—that is, a sine or cosine function—maps to motion in pitch register, while the continuous turning translates to continuous onsets in time. In standard Western notation, this resembles a wave-like oscillation.⁽⁵⁾ Herrmann's arpeggiations comply with a sinusoidal wave in particular: if measured in semitones, their outer intervals—the B \flat -C major second, E \flat -G \flat minor thirds, and D-G \flat diminished fourths—are never larger, and are sometimes smaller, than the exclusively G \flat -B \flat major-third inner intervals. Dan Blim (2013) cites this and other examples of musical spirals in Herrmann's music for *Vertigo*, connecting them with the many visual spirals throughout the film and even with an interpretation of the film's story as a spiral. He offers an analogous musical-visual-narratological analysis of *Vertigo's* mirrors, noting, for example, that Chord A4, as a pitch-class set, exhibits mirror symmetry.

[2.2.2] The curvilinear forms in *Vertigo's* main title are Lissajous curves, named after the nineteenth-century French physicist Jules Lissajous (1822–1880) who, like other scientists of his day, was engrossed in the prospect of visualizing vibrations, including sounds. Two mirrors attached to two tuning forks at right angles to one another combine the sinusoidal functions of the two forks' pitches into a two-dimensional loop that becomes more Arabesque-like the more complex the frequency ratio is. In one way, this is the inverse of spinning-becoming-arpeggiating: instead, waves extended in time collapse into a closed two-dimensional loop. **Video Example 1** demonstrates in slow motion the making of a relatively simple Lissajous curve in which the two component pitches are in a 5:3 ratio, the ratio of a pure major sixth.⁽⁶⁾

[2.2.3] Bass did not create the Lissajous curves of *Vertigo's* main title. Instead, he engaged John Whitney (1917–1995) for this task, although Whitney's name does not appear in *Vertigo's* credits. Whitney was not only a filmmaker who pioneered computer and digital animation, but he was also a composer who studied the twelve-tone technique and explored analogues for it and other musical structures and processes in the visual world. In the foreword to his book *Digital Harmony: On the Complementarity of Music and Visual Art*, he summarizes his artistic vision: ". . . the foundation of my work rests first upon laws of harmony, then in turn, upon proof that the harmony is matched, part for part, in a world of visual design. . . These laws operate in a graphic context parallel to the established context of music. . . Attractions and repulsions abound in visual structures as they become patterned motion. This singular fact becomes a basis for *visual harmony* with a potential as broad as the historic principles of musical harmony" (1980, 5). Any analyst of *Vertigo* proposing homologies between its music and moving images would, at the least, find a kindred spirit in this innovative but less recognized contributor to *Vertigo's* composition.

[2.2.4] Herrmann's music for *Vertigo* drips with the chromatic harmonic styles allied with Middle-European romanticism and postromanticism, particularly the music of Richard Wagner: both

allusions to and quotations from *Tristan und Isolde* in particular occur throughout *Vertigo*'s score. In interpreting such music from this time period, some music scholars have found hermeneutic value in projecting its materials onto some geometric space. **Example 3** compiles an selection of such analyses that appeared around the turn of the twenty-first century: Fred Lerdahl's interpretation of the heaven-earth and good-evil axes in Wagner's *Parsifal* (1994, reworked in 2001); Edward Gollin's interpretation of Schubert's wandering pilgrim (2000, 308–23); Daniel Harrison's "resurrexit in tertio subdominanto" interpretation of Mahler's Second Symphony "Resurrection" (2002, 137–38); and Berthold Hoeckner's interpretation of Heine's "Armesünderblum" in Schumann's *Dichterliebe* (2006). These analyses and many others like them employ some sort of register-blind spatial arrangement of pitch classes, roots of triads, or tonics of keys in which perfect fifths are laid out along one axis, and major or minor thirds are laid out along another non-parallel axis: what is commonly labeled as a *Tonnetz*.

[2.2.5] When enharmonic equivalence is imposed upon the *Tonnetz*, bending both its lines of perfect fifths and its lines of major or minor thirds into cycles, the result—now well known in music-theory circles—is a torus. **Example 4** shows the common doughnut depiction of a torus embedded in three dimensions. Less well known is the close relationship between the torus and the Lissajous curve. **Video Example 2** simulates some uniform motion—in this case, ascending perfect fifth motion—around the three-dimensional toroidal *Tonnetz*. If this uniform motion is projected onto a plane—like how an object moving in three dimensions might cast a shadow moving along a two-dimensional wall—one produces a close approximation of a Lissajous curve. It is sometimes said that music adds a third dimension to cinema's two: perhaps Whitney's spirals in *Vertigo* display the casting of this third dimension of music back onto the screen. Whitney's spirals are more complex than the Lissajous curve generated during Video Example 2, because Whitney's are based on polynomial parametric equations, instead of the monomial ones used in Video Example 1. However, this is consistent with how Herrmann's music is more than just uniform motion—like ascending perfect fifth motion—around the *Tonnetz*.

3. Light to Dark: Lining up Two Dimensions of Cinematic and Pitch Spaces

[3.1] In making my three audiovisual connections between Herrmann's harmonic progressions and Bass's moving images for *Vertigo*'s main title, I will also employ a version of the *Tonnetz*. This is not unprecedented: Kenneth Smith (2018) uses similar networks to interpret music from *Vertigo*. However, Smith's visuals can withstand manipulability; in other words, they could be reoriented or reshaped and essentially serve the same function. Even the graphs used by Gollin, Lerdahl, Harrison, and Hoeckner cited earlier could be flipped, rotated, skewed, or otherwise transformed without altering their basic arguments, such as "one pitch is three-unit distances from another." By contrast, the use of the *Tonnetz* in my analysis of *Vertigo*'s main title is as a precisely calibrated metric that cannot be so transformed without changing the analysis. I respectively map its two axes—the rising-perfect-fifth axis and the rising-major-third axis—to the left-to-right and down-to-top axes of the two-dimensional cinematic screen. **Example 5** shows one example of a *Tonnetz* both oriented specifically as such and non-toroidal, "unconformed" (Harrison 2002) to any equivalences (beyond those involving octaves) and thereby made flat like a screen. The shading will be explained momentarily.

[3.2] This mapping may appear arbitrary and, worse, contrived. A correspondence of this type may remind the film scholar of the Russian director Sergei Eisenstein's (1942, 173–216) study of audiovisual, or vertical, montage, in which, in the most famous example from the "Battle of the Ice" scene from *Alexander Nevsky*, he draws a literal two-dimensional correlation between the two-dimensional pages of Prokofiev's notated score and the two-dimensional static cinematic images that the score accompanies. Critics like Theodor Adorno and Hans Eisler (2005 [1947], 153), Roy Prendergast (1992, 223–26), and Nicholas Cook (1998, 57–65) rebuked this kind of correlation, citing how the temporal and processual horizontal dimension of music notation fails to match the spatial and instantaneously perceived horizontal dimension of the filmic frame. Royal S. Brown (1994, 135–38) sides with Eisenstein, arguing both against the immediacy of the cinematic image's perception and for an atemporal understanding of music's structures, and validating the mapping

of an up-down verticality in both spaces: higher in musical pitch maps to higher in the filmic frame.

[3.3] My analytical use of the two-dimensional *Tonnetz*, rather than a two-dimensional notated score, as a parallel to the cinematic frame sidesteps the problem of temporal mapping in Eisenstein's correspondences. Both the unconformed *Tonnetz* and the filmic frame can act as atemporal "grounds" upon which corresponding "figures" can move in time.⁽⁷⁾ However, the *Tonnetz*, even the unconformed version, also apparently relinquishes the VERTICALITY image schema: what should be "up" on a *Tonnetz*? Candace Brower (2008) tackles this question from the perspective of cognitive science in general and conceptual metaphor theory in particular, resulting in an "embodied *Tonnetz*." **Example 6** displays a portion of her embodied *Tonnetz*, but, like Example 5, without conforming equivalence. For Brower, the verticality of the overtone series orients triads with their fifths above their roots and their thirds in between. Furthermore, metaphor theory posits that, on the conventionally oriented circle of fifths (matched to the twelve positions of the clockface), a pitch class thirty degrees (one hour) clockwise from another pitch (such as G from C) circle is "sharper" and "brighter" and therefore should be positioned "higher." Brower maps the last two of these qualifiers to one another by citing "our experience of the brightness of the sky versus the darkness of the ground when turning our eyes upwards or downwards" (2008, 75).

[3.4] Additionally, she arranges the constituents of two triads or two keys in a parallel relationship (e.g., C major versus C minor) such that the sharper is both slightly above and to the right of the flatter. While the latter choice is arbitrary, the former choice is not. Placing C major higher than C minor on the embodied *Tonnetz* expresses a metaphorical height differential in two ways: in a closest registral realization, E in a C-major triad has a slightly faster pitch frequency than E \flat in a C-minor triad; and E in a C-tonic context is "sharper" and "brighter" and thus "higher" than E \flat in the same context. In her four-point "embodied compass," Brower accounts for both of these ways: motion down or to the left is a "darkening" motion, but motion exclusively to the left is a motion exclusively from "happy" to "sad," "explained as a result of the [semitonal] lowering of the third of each primary triad" (2008, 75).

[3.5] Despite their shared dark/bright parallels, Brower's choice to otherwise differentiate the two axes of her embodied *Tonnetz*—the vertical axis conveys perfect-fifth relations of tension and relaxation, and the horizontal axis conveys semitonal relations of happiness and sadness—is made for good reason. Imagine if only the metaphor of "sharper" and "brighter" as "higher" were applied to both horizontal and vertical dimensions of her embodied *Tonnetz*. B \flat would be higher than E \flat , but E \sharp would be higher still. To generalize, on the circle of fifths, a pitch class thirty degrees (one hour) clockwise from another pitch (such as G from C) is "sharper" and "brighter" and therefore "higher." However, on the same circle of fifths, a pitch class 120 degrees (four hours) clockwise from another pitch (such as E from C) is four times "sharper" and "brighter" and therefore four times "higher" than a change from C to G. Realizing these two different magnitudes of the same measurement in the two dimensions of a *Tonnetz*, laid out using the same perfect fifths and major thirds, skews the bright-dark continuum 14 degrees off from vertical. The tangent of 14 degrees is 1/4, and, octaves, tunings, and temperaments aside, there are four perfect fifths in one major third; for example, C to E = C to G to D to A to E. Both this equivalence and the resulting skew are demonstrated in Example 5, whose shading gradient is tilted 14 degrees from vertical. However, Brower's "brightness of the sky" is simply up, not 14 degrees displaced from up. As far as I understand it, conceptual metaphor theory, and the VERTICALITY image schema in particular, cannot accommodate such skewing.

[3.6] However, the visuals of the main title for *Vertigo* can. Bass illuminates the woman's face with a single stationary light source well above but also slightly displaced from her center toward the left side of the woman's face, or, equivalently, toward the right side of the cinematic frame. The angle of displacement is hard to measure precisely, as the shadows cast by facial protuberances—nose, lips, eyelashes—fall upon curved surfaces and are themselves angled or curved. On the still of **Example 7**, I approximate the angle to be 37 degrees, which is admittedly more than 14 degrees of Example 5's skew. But the light is still farther up than it is to the woman's left. Therefore, since Bass's camera motions from station to station are mostly orthogonal to the cinematic frame, these

motions clearly fall into one of two categories: horizontal motion that moves minimally toward or away from the light source, and vertical motion that moves considerably toward or away from the light source. Respectively, these two orthogonal motions correspond well to perfect-fifth motion, which metaphorically brightens or darkens by some minimal unit, and motion by some intervallic compound of n perfect fifths, which metaphorically brightens or darkens by n units. As the angle of Bass's lighting is somewhat indeterminate, so should n also be. However, Bass's videography captures contiguous parts of the woman's face, as naturalistic depiction requires, and these parts progress continuously away from or toward the light source. Since Herrmann's harmonies for *Vertigo's* main title are built from perfect fifths and thirds, any correspondence between them and Bass's camera stations will be best served by an n of 3, 3.5, or 4, because this generates a *Tonnetz* in which the constituents of tertian harmonies are likewise contiguous and continuous in their relation to the light source.

- An n of 3 produces a *Tonnetz* of orthogonal perfect fifths and minor thirds and a displacement angle of around 18 degrees (\arctan of $1/3$), like the graphs by Lerdahl and Hoeckner in Example 3, but flipped.
- An n of 3.5 produces a *Tonnetz* of triangulated perfect fifths, minor thirds, and major thirds and a displacement angle of 16 degrees (\arctan of $1/3.5$), like the graphs by Gollin and Harrison in Example 3, as well as the design Richard Cohn consistently employs in his 2012 book *Audacious Euphony*.
- An n of 4, as aforementioned, produces a *Tonnetz* of orthogonal perfect fifths and major thirds and a displacement angle of around 14 degrees (\arctan of $1/4$), like the graph in Example 5.⁽⁸⁾

[3.7] To summarize, in the first part of *Vertigo's* main title, there are camera motions both minimally (right and left) and considerably (up and down) toward and away from the single light source. There are also harmonic progressions both minimally (perfect-fifth-related) and considerably (third-related) sharpward and flatward. The metaphor of musically-sharp-is-visually-bright suggests aligning the two dimensions of these two spaces, especially since the light source is at an angle that approximates the ratio between the minimal and considerable motions. It is important to recognize that cardinal directions like left or up, while mnemonically useful, are independent of this metaphorical alignment and my correspondences that rely upon it: the filmic image could be inverted or rotated without altering any of my arguments, which rely solely on how Bass's camera and Herrmann's chords are moving closer to or farther from something that is brighter.

[3.8] Theories of function corroborate a two-dimensional parametrization of musical sharpness and flatness. Minimal sharpward and flatward motion as transposition up and down by perfect fifth typically matches a unit functional change (usually dominant or subdominant to tonic, or vice versa) but no chromatic change, as perfect-fifth motion strays less, if at all, from a diatonic center. Third motion inverts the size of these two vectors: the most quintessentially chromatic moves between tertian harmonies use root motion by thirds. Yet, in Hugo Riemann's theory of harmonic syntax, such motion best preserves harmonic function, as encapsulated in his parallel (e.g., S_p) and counterparallel (e.g., \mathfrak{D}) modifiers. Cohn has extended this idea to major thirds in particular, speculating that, for Romantic-era music, triads a major third apart belong to the same functional category (1999). Following this conjecture, I will use the $n=4$ *Tonnetz* orientation, because this supports the idea of breaking down any harmonic motion into pure functional changes and pure chromatic changes, matching how the mostly orthogonal camera motions can be easily broken down into minimal or considerable motions toward or away from the light source.

4. Correspondence #1: Camera and Chord Progressions

[4.1] All of Herrmann's main title music uses only ten of the twelve pitch classes: pcs 1 ($C\#/D\flat$) and 5 ($E\#/F$) never occur. **Example 8** lays out these ten pitch classes into a two-dimensional grid that uses the $n=4$ arrangement. The specific position of these ten pitch classes—why, for example, is D not next to A?—reflects the overlapping progression of chords A, B1, B2, B3, and B4, also shown in Example 8. Each chord shares common tones with the chord that precedes it and follows it; therefore, each chord's location on the planar *Tonnetz*, of the infinite number of places it could occur, is fixed relative to that of the others. Rather than function as a neutral canvas upon which

musical events take place, the pitch-class grid of Example 8 thus takes on a shape that reflects those events.

[4.2] Setting aside chronology for the moment, the union of the five camera stations in the first part of Bass's main title—overlaid in **Example 9** for immediate comparison—and the union of the five harmonies in Example 8 bear a strong resemblance. In both cases, both the brightest (upper right) and darkest (lower left) corners are skirted. The music avoids continuing from chord B2 or B4—chords with a B—to a chord with a functional F[♯] such as a B-minor triad or a G-major-seventh chord, but also avoids pivoting from the A[♭] of chord B1 to a chord with an even flatter pitch, such as a D[♭] major or minor triad, or an F[♭] major triad. Correspondingly, the camera never shows the part of the left side of the woman's face level with her eyes—the top of her left ear, which would have been closer to the light source than anything else shown—as well as the lower right side of her face, as the part most cast in shadow.

[4.3] The order in which these chords and stations progress in time also match to a significant degree. In both cases, the progression from the first to the second event is a minimally darkening motion, which happens to be toward the left in both Examples 8 and 9. For the image, the move from the side of the woman's face to the tight shot of her lips is mostly lateral to the light source, but still away from it to a small degree. For the music, this means moving from the locally asserted tonic of E[♭]—the root of chord A—to its subdominant of A[♭]—the root of chord B1. This is an incremental functional darkening, rather than any substantial chromatic change.

[4.4] Moreover, and independent of motions of root and camera, in both music and image the vertical extent starts at its maximum and then immediately narrows in this initial progression. Herrmann's chord A embeds an augmented triad—a stack of two major thirds—that binds together in a single chord the broadest span between sharpest and flattest notes of all five chords, as shown in Example 8 with the vertical dotted double-headed arrow connecting G[♭] and D[♯]. (Chord A's E[♭] root makes clear which notes of the otherwise symmetrical augmented triad are the flattest and sharpest.) This striking musical chiaroscuro attenuates in its level of sharp-flat contrast with the change to an A[♭]-major chord (chord B1): the flattest note sharpens from G[♭] to A[♭], and the sharpest note flattens from D to C, a move literally sounded with the melody's Tristanesque appoggiatura and resolution. To use a cinematic analogy, this harmonic progression figuratively zooms in from one special chord's unusually wide view of the bright-dark continuum, to a close-up of an ordinary consonant triad's smaller occupation of such. Bass's Station 1 is literally the most zoomed out of any station in the main title, shown with the largest frame labeled as Station 1 in Example 9. In such, the vertical dotted double-headed arrow connecting the top and bottom of the frame spans the most vertical distance on the woman's face and well establishes the viewer's orientation between illumination and shadow. The zoom simultaneous with the move to Station 2 takes away some of the light-dark contrast; the position of the off-camera lamp is less clear when looking only at Station 2.

[4.5] The visual and musical progressions from the second to the third event of each also closely match. For the image, the move straight up from the woman's lips to her eyes is a marked motion nearly directly, but not exactly, toward the light source. For the music, the A[♭] major triad's passage to an A-minor chord plus a major ninth sharpens and thus brightens considerably the harmonic pitch class content: both the A[♭] and the E[♭] lose their flats to become A and E.⁽⁹⁾ However, the functions of chords B1 and B2 are arguably much more similar to each other than that of chords A and B1. The change of root from A[♭] to A[♯] within an E[♭]-as-local-tonic environment evinces a change from IV to [♯]iv but a maintenance of predominant function of these *Stufen*. Also, Cohn's function theory puts A minor in the same functional category as F minor a major third away, and F minor as ii in E[♭] is a well-recognized functional surrogate for A[♭]'s IV, if slightly more plagal. Hence, this progression is the component-wise inverse of the previous—a substantial chromatic brightening, rather than an incremental functional change—corresponding to the 90° turn in trajectory.

[4.6] Moreover, and independent of motions of root and camera, in both music and image the horizontal extent expands to its maximum when the third event is achieved. As aforementioned, Station 1 displays the greatest vertical span of the woman's face. However, even though Station 1 is zoomed out the most, due to its placement of the woman's face considerably off center, Station 1

does not show the most horizontal distance on the woman's face. Rather, this maximum is saved for Station 3's view of the woman's two eyes, as shown in Example 9 by the horizontal dotted double-headed arrow connecting the left and right side of the frame. The woman's left eye is somewhat more illuminated than her right; in fact, this station affords the best opportunity to witness horizontal contrast anywhere on the woman's face. However, her two eyes are also mostly equidistant from the light source. Likewise, chord B2's major ninth added to an A-minor triad is the one chord of the five most expanded in the functional dimension: it contains not only the usual root-as-tonic and fifth-as-dominant, but also a ninth(-or-second)-as-double-dominant. The vertical dotted double-headed arrow connecting the pitches A and B in chord B2 of Example 8 signifies this maximal bright-dark expanse along the fifth-based functional continuum. However, unlike chord A and its embedded augmented triad, this expansion is diatonic, lacking chord A's chromatic vividness.

[4.7] Bass's next two camera stations (4 and 5) and Herrmann's next two harmonies (B3 and B4) do not emulate one another as closely as the preceding three of each. However, both harmonic and camera progressions slow down at this point, mostly hovering around territory already visited rather than relocating to new territory. In Bass's video, Station 4 zooms in on the woman's right eye, and Station 5 slightly zooms in further. On the one hand, chord B2's farthest reach to the upper-left with the A—the pitch most coloristically bright but the most functionally dark (plagal)—matches Bass's arrival at Stations 4 and 5, the part of the filmed face closest to the light source vertically but farthest from it horizontally. On the other hand, the progression from chord B3 (C-minor triad) to chord B4 (C-major-seventh chord) not only retreads a portion of the pitch content of chords B1 (A \flat -major triad) and B2 (A-minor add-9), but also imitates and clarifies the coloristic brightening but functionally static progression from chord B1 to chord B2 that corresponds to Bass's motion of the camera up toward the light source. This echo, along with the significant contrast in dynamics as shown in Example 1, helps to establish an affinity between next-adjacent chords, such as B1 and B3, that will be useful during the second correspondence.

[4.8] The two progressions of five camera stations and five chords homologized with one another in Correspondence #1 take place largely at different times: the preceding chords A1–A5 accompany the five homologized camera stations, and the five homologized chords (A, B1–B4) take place only after the camera has settled into Station 5. While this temporal displacement may appear to be a setback for Correspondence #1, it plays a crucial role in how this correspondence relates to the narrative that follows *Vertigo's* main title, which I will share at the end of my article.

5. Correspondence #2: Figure and Chord Rotations

[5.1] By contrast, my second correspondence involves events more simultaneous in the second half of *Vertigo's* main title: the chords A through B4—the same scrutinized for Correspondence #1—and Bass's Lissajous figures. Nine such figures of different colors and designs follow one after the other on average every twelve seconds, usually overlapping each other a bit and each growing in size as if they are directly approaching the viewer from the center of the frame. Most have a rotational symmetry of two—that is, a 180° rotation along with the trivial 0° rotation preserve the shape of each—but two of them have a much higher degree of rotational symmetry (35, to be exact) and are therefore basically “circular.” Excluding one, these figures spin around this center: all of them counterclockwise, except one that spins clockwise. The spinning figures rotate at a speed of one rotation every six seconds, so they complete at least one rotation.

[5.2] Cohn (2012, 113) calls the group of three major triads and three minor triads that all share a single pitch class a neighborhood. For example, the triads of A \flat major, C minor, C major, A minor, F major, and F minor constitute a neighborhood, because they are the six consonant triads with a C. When the triads of a neighborhood progress such that adjacent triads share two common tones—the order listed in the previous sentence is one example—Cohn taps into metaphors of pivoting and revolving and labels such a progression a pitch retention loop. Chords B1 through B4 all contain a C and thus could be heard as circling around this pitch class as a center point, akin to the rotation of the Lissajous curves. However, with the exception of the C-major and C-minor triads, their progression is not stepwise around this loop, in contrast to the smooth rotations of the

Lissajous curves. The fact that Herrmann uses no chords built on F from this neighborhood may also seem a drawback—Bass’s animations of Whitney’s curves always complete their rotations—although this absence of F is crucial for my third correspondence.

[5.3] Chords A, B1, B2, and B3 also correspond in a different manner to the animated Lissajous curves via rotation as well as revolution. As shown on Example 8, chord A—the E \flat “Hitchcock” chord—and chord B2—the A-minor add-9—both have the same “T-tetromino” shape and are 90° rotations of one another. (While the observations of Correspondence #1 could be demonstrated on a *Tonnetz* where $n = 3, 3.5, \text{ or } 4$, this rotational observation works only on a $n=4$ *Tonnetz*.) This geometric equivalence complements the more standard transpositional and inversional equivalences, as the two chords A and B2 are in different Forte set classes: 4–19 [0148] and 4–14 [0237], respectively. Stephen Brown (2003) explored the advantage of geometric equivalence and transformation in his study of “dual interval spaces,” of which the *Tonnetz* in Example 8 is one. This rotational relationship can be heard and conceived by generating each chord in a specific manner using brightening or darkening perfect fifths and major thirds but swapping intervals, change of intensity, or both in the wording of one of the two generations. Chord A, or some transposition of it, can be generated by first combining some note with a note a perfect fifth brighter, then, from that note, adding the notes a major third both brighter and darker. Chord B2, or some transposition of it, can be generated by first combining some note with a note a major third brighter, then, from that note, adding the notes a perfect fifth both darker and brighter. Another rotation, which Herrmann does not use as a chord in this main title, could be heard and conceived by substituting “brighter” for “darker” and vice versa in either preceding sentence.

[5.4] Likewise, chords B1 and B3—the A \flat major and C-minor triads—both have the same “L-triomino” shape and are 180° rotations of one another, as shown on Example 8. As before, this rotational relationship can be heard and conceived by swapping terms in an otherwise equivalent generation. Chord B1, or some transposition of it, can be generated by first combining some note with a note a perfect fifth darker, then, from that note, adding a note a major third brighter. Chord B3, or some transposition of it, can be generated by first combining some note with a note a perfect fifth brighter, then, from that note, adding a note a major third darker. Another rotation, which belongs to Forte class 3–4 [015] and which Herrmann does not use as a chord in this main title, could be heard and conceived by substituting “perfect fifth” for “major third” and vice versa in either preceding sentence.⁽¹⁰⁾

[5.5] I concede that this second observation of rotation is less distinctive: all major and minor triads look like L-triominoes on the $n=4$ *Tonnetz*. I also concede that both pairs of chords could be equally geometrically interpreted as flips of one another as well as rotations of one another, since both the T-tetromino and the L-triomino are not chiral, which means that they are inversionally symmetrical. However, more distinctive is the fact that both rotations use the same fulcrum, indicated with a dot in Example 8 in between the pitch classes C and E \flat . This shared fulcrum can be heard and conceived by replacing the words “some note” in the two pairs of sentences in the preceding two paragraphs with the notes C and E \flat respectively, and removing the words “or some transposition of it,” because not just any transposition will do:

- Chord A can be generated by first combining E \flat with a note a perfect fifth brighter (B \flat), then, from that note, adding the notes a major third both brighter (D) and darker (G \flat). Chord B2 can be generated by first combining C with a note a major third brighter (E), then, from that note, adding the notes a perfect fifth both darker (A) and brighter (B).
- Chord B1 can be generated by first combining E \flat with a note a perfect fifth darker (A \flat), then, from that note, adding a note a major third brighter (C). Chord B3 can be generated by first combining C with a note a perfect fifth brighter (G), then, from that note, adding a note a major third darker (E \flat).⁽¹¹⁾

[5.6] Lastly, the dot in Example 8 is located in the very center of the ten-pc pitch network, if the very center is defined either as the center of the smallest square into which this particular graph would be inscribed, or the middle of the network’s longest main diagonal, the minor-third chain from A to G \flat . This corresponds to how the Lissajous curves rotate around the very center of the filmic frame, although the moves of Herrmann’s chords through Example 8 are just as much

revolutionary as they are rotational. Yet this is consistent with how the center of each Lissajous curve remains an empty space, like the pupil of the eye from which these curves appear to emanate initially. Therefore, perhaps the motion of the Lissajous curves could be interpreted as components of the curve revolving around this empty center to a degree comparable to how each curve as a whole rotates around the same center.

[5.7] Chords B4 and B5 ($A\flat-C\flat-E\flat$, not shown in Example 8) would achieve the exact same rotational relationship around the same $C-E\flat$ fulcrum if only 1) chord B4 excluded its seventh B, which is a standard deletion in triadic-transformation analysis, making it a C-major triad, or 2) if a lower root $F\flat$ was subposed below chord B5's $A\flat$ -minor triad, making it a $F\flat$ -major seventh chord. From C, brightening perfect fifth(s) and major third(s) would generate the C-major triad or seventh chord of B4; from $E\flat$, darkening perfect fifth(s) and major third(s) would generate the $A\flat$ -minor triad or $F\flat$ -major seventh chord of B5. But it makes sense to exclude chord B5 from this type of correspondence, and from Example 8, because, for the first time in this main-title music, enharmonicism rears its head in a harmonic progression. The $B\sharp$ in chord B4 is enharmonically equivalent to the $C\flat$ in chord B5—this common-tone enharmonicism would not exist if Herrmann had not included the pitch B in chord B4. “Radically” discarding the recent memory of $A\flat$ of chord B1 would permit an interpretation of chord B4 instead as a $G\sharp$ -minor triad that embraces the brightness of the B common to its predecessor B4.⁽¹²⁾ However, following from this interpretation of B5 as a $G\sharp$ -minor triad, the functionally clear iv-V-I ($G\sharp m-A\sharp M-D\sharp m$) progression among chords B4, B5, and A1 (or C1) would therefore insist on $D\sharp$ instead of $E\flat$ for the root of the tonicized “Hitchcock chord” of *Vertigo*'s main title, and thus complete the enharmonic circumnavigation.

[5.8] As is well documented, enharmonic equivalences like these muddle the definitions of sharp, flat, bright, dark, and center upon which the first two correspondences have relied, rendering these concepts less usable. In fact, this is the reason that my first two correspondences have stopped just short of chord B5. Although the third correspondence will draw upon these equivalences that chord B5 instigates, chord B4 can still contribute to the second correspondence. As a major-seventh chord, which assumes the shape of a square on the $n=4$ Tonnetz of Example 8, it can be understood as a rotation of itself. This rotational invariance can be heard and conceived by choosing any note, and generating the rest of the notes using equal parts brightening and darkening intervals, and equal parts perfect-fifth and major-third intervals distributed crosswise. For example, to make chord B4, start with a C, then move by brightening major third (to E), brightening perfect fifth (to B), darkening major third (to G), and, to bring it full circle, darkening perfect fifth (back to C). To be sure, its pivot point—the spot between E and G on Example 8—is not the same as that which pivots chord A to B2, and B1 to B3—the spot between C and $E\flat$ marked with a dot in Example 8. Again, if it were so, enharmonicism would weaken the very notion of a pivot point. Nonetheless, its highest symmetry of all of the harmonies in Herrmann's prelude on Example 8 likens chord B4 to the two “circular” Lissajous curves in Bass's titles, of which the first appears as the first occurrence of chord B4 sounds.

6. Correspondence #3: Figure- and Pitch-Space Topologies

[6.1] Toward the end of my argument for the second correspondence, I proposed that the progression from chord B4 to chord B5 is the first progression in the main title to invoke an enharmonic synonym, specifically, $B = C\flat$. Such enharmonic equivalence emerges for a certain kind of harmonic progression when its analysis prioritizes a common diatonic spelling of chromatic tones common between harmonies both adjacent (like the pitch class 11—the “B”—in both chords B4 and B5) and formally equivalent (like the {236t} chord—the “ $E\flat$ minor-major seventh chord” that I have labeled as the A chord—that both precedes and follows the progression through the B harmonies). Applying such enharmonic equivalence to a space like that of Example 8 requires curling it up. This suggests converting the analysis's appropriate geometry from a plane to a torus, music theory's default space to accommodate enharmonic equivalence.

[6.2] However, I believe that, for an analysis of this music, such a default conversion goes too far. The graph atop **Example 10** imposes the equivalence between the B of chord B4 and the $C\flat$ of chord B5 on Example 8, fusing together these two points to create a tight loop in the center of the graph.

(13) This loop apparently makes unreliable the notions of sharper and flatter, because pitch class 11 is now positioned as the extremes of both: as B[♯], it is the brightest pitch class sitting atop chord B₄; as C_♭, it is the minor third of E_♭'s subdominant harmony, one-upping G_♭, the minor third of E_♭'s tonic harmony, as the flattest pitch class among the B chords. This short circuit can elicit the experience of the film's titular condition: Cohn has described such enharmonic paradoxes as "inducing a mild type of vertigo" (1996, 11). But a torus is not the only relevant curved musical space. Earlier I wrote that "[r]ather than function as a neutral canvas upon which musical events take place, the pitch-class grid of Example 8 thus takes on a shape that reflects those events." I believe the same can be said of the graph in Example 10. This shape—cyclical in the middle, spindly toward the edges—reflects the equal-tempered pitch-class equivalences that Herrmann's harmonic progression does and *does not* invoke. What is missing in Herrmann's music is any closed loop that involves the perfect fifth; only by adding such a loop to a three-major-third loop already presented in Example 10 does a torus materialize.

[6.3] I will articulate two such absences of this kind. First, the only two pitch classes of the ten in Herrmann's prelude that span a perfect fifth or fourth but are not adjacent in Examples 8 or 10 are D and A. Herrmann's choice and ordering of harmonies keeps these two pitch classes from forming any perfect-fifth-related bond, either functional between successive harmonies (one as dominant or subdominant to the other) or as consonant within a harmony.

[6.4] Second, as mentioned earlier, Herrmann's prelude is missing an F. Its subposition under chord B₅, producing an F half-diminished seventh chord, would be extremely proper and conventional for reasons both less and more germane. Less germane to my third correspondence is how this F would produce, in its exact transposition, the famous "Tristan chord" that generally represents in microcosm the Wagnerian idiom Herrmann appropriates for this movie and a chord Herrmann specifically uses later in the movie, particularly when Judy first appears dressed as Madeleine to Scottie on the opposite end of a hotel hallway. More germane to my third correspondence is how this F would pull together the left and right sides of Examples 8 and 10 into a looped series of pitch classes (E_♭-A_♭-C-F-B_♭-E_♭) I will call a "syntonic loop," named after the comma that this loop produces in just intonation and comprised of a series of just intervals that sum to four perfect fifths down and one major third up. A syntonic loop, or the even longer circle of perfect fifths, transversely situated to the aforementioned three-member (E_♭-G-B-E_♭) major-third loop shape the pitch space of Examples 8 or 10 into something much closer to a torus. Put another way, an F below chord B₅ enables a more standard functional progression, as shown in **Example 11**, and a syntonic loop through the succession of harmonies. However, my point is not just that an F is missing from chord B₅. My point is also that what is missing from Herrmann's main title is any one of the many common-practice harmonic progressions that begin and end on the same pitch-class harmony that also form a harmonic foundation for a syntonic loop, such as I-vi-ii-V-I (syntonic loop: 1-3-6-2-5-1) or I-IV-ii-V-I (syntonic loop: 1-4-6-2-5-1). This absence makes the graph in Example 10 even more representative of the music that roves through it.

[6.5] Accordingly, as shown with the still in the background of Example 10, Bass does not display Lissajous designs uniformly, which, in their standard form like that of Video Example 1, typically show a continuous curving line that closes into a loop. Rather, by shading their perimeters in particular and zooming in so much that they exceed the frame, Bass's titles concentrate on central circularities while allowing the peripheral loops of the original Lissajous curves to fade into non-continuous tendrils or hooks, some cut off at a point by the edges of the screen. This hybridization of infinite cyclicity and finite linearity in Bass's treatment of Whitney's curves also appears in a similar fashion in the part-plane, part-torus *Tonnetz* atop the still of Example 10. Just as this network completes the shorter major-third loop but not the longer syntonic loop or even longer perfect-fifth cycle, the complete loops that the viewer sees most clearly in *Vertigo's* Lissajous designs are small with a higher curvature and the broken or faded loops are larger with a lower curvature. The enharmonic equivalence of pitch class 11 puts this small major-third loop in the middle of the graph, with notes extending outward both in ascent and descent by perfect fifth away from it, with the ascending perfect-fifth side winnowing from C_♭ to the singularly distal G_♭ and the descending-perfect-fifth side winnowing from B to the singularly distal A. This parallels not only how most of the Lissajous designs feature two curved horns that extend and taper away

from the rounded center, but that these two curved horns are on opposite sides of the center, bestowing upon it a rotational symmetry of two. Example 10 shows this relationship through superimposition. Lastly, recall that Video Example 2 shows how the projection onto a two-dimensional plane of uniform motion, such as motion through the circle of fifths, through a three-dimensional rendition of a torus is a Lissajous curve. If the torus lacked some perfect-fifth edges, as in the graph of Example 10, then a similar projection would create vacancies in the resulting Lissajous figure not unlike those induced by Bass's shading of Whitney's curves.

7. Correspondences with *Vertigo's* Narrative

[7.1] The merger of central closed loop and marginal open hooks in both music and visuals suggests an uneasy amalgam of an imprisoning interior cycle and the longing for a sense of orientation. This amalgam readily describes both the plight and aspirations of *Vertigo's* protagonist: although James Stewart's Scottie is afflicted by acrophobia-generated vertigo through much of the interior of the film, the film begins briefly with him chasing a crook over San Francisco rooftops, before the harrowing event that produced his condition, and ends with him looking down from the bell tower of a mission church, now cured of his vertigo. This final shot of the film features an alternation between chords B1 and B4 with the same melodic notes from the prelude. The concluding B1-B4 succession—the last harmonic progression in the entire film—strips chord B4 of its seventh B, leaving a C-major triad to finish the movie. On its own, this \flat VI-I cadence certainly satisfies. But, in the context of the main title, the choice of the music for this final moment in the narrative comports with my reading of Herrmann's main-title music. It was the succession from chord B4 to chord B5, and pitch class 11 as common tone in particular, that triggered the vertiginous major-third loop singled out in my third correspondence. Herrmann's music at the end of the film takes away this succession and even this common tone, at the moment where Scottie's freedom from vertigo is most apparent.

[7.2] This is not the first time that the B music is heard after the main title. Many interpreters call this music—the melodic presentation, often twofold, of the D-C-B-E treble pitches, plus the harmonies B1 through B4—the film's "Love theme." It appears throughout the film in conjunction with Scottie's adoration of Madeleine, sometimes with slight adjustments to the harmonies, or lower-neighbor adornment of the second note (D-CBC-B-E), or both. For instance, Herrmann distributes five separate instances of this theme among an exudation of other love-associated musical ideas into the single cue entitled "Scene d'Amour," in which Judy completes her transformation into the likeness of Madeleine, fulfilling Scottie's obsession.

[7.3] My first correspondence anticipates this association. Bass's visuals divide the main title into two successive parts: the camera motions across the woman's face, and the Lissajous rotations. Herrmann's music divides into two alternating parts: the A harmonies with the $E\flat$ -rooted "Hitchcock chord" and the B harmonies that include the "Love theme." (The last few seconds of the main title brings back the first part of each.) Of the four possible image-music overlaps among these four parts, only one is not used: never in the main title does any of the "Love theme" music accompany the woman's face, either missing an opportunity or avoiding the obvious. However, my first correspondence asserts that the B music for the main title reproduces in tone the camera's motions across the woman's face. This correspondence surreptitiously links together Bass's (and the viewer's) captivated gaze, which shifts its transfixed infatuation from one facial feature to the next, with music by Herrmann that will become entwined with romantic obsession in the narrative to follow.

[7.4] In a 2017 essay, Kevin Clifton hears multiple musical doubles in Herrmann's main title for *Vertigo*, and relates them to the film's "many double identities . . . from Madeleine's supposed possession by her great-grandmother, to Madeline being played by Judy in Elster's diabolical scheme, to Judy's uncanny makeover to resurrect the dead Madeleine in Scottie's twisted fantasy" (2017, 44). His musical doubles include: (1) the two tripleted lines that arpeggiate the $E\flat$ -minor-major "Hitchcock" seventh chord in contrary motion, shown in Example 1; (2) the voice exchange of $G\flat$ and $B\flat$ within these two lines; (3) the repetition of the D-C-B-E idea in the "Love theme;" and

(4) the notational enharmonic equivalence of F[♯] in chord B6 with G[♭] in the restated “Hitchcock” chord that immediately follows it.

[7.5] Contrary motions, voice exchanges, melodic repetitions, enharmonic respellings—these musical relationships certainly invite cross-domain mapping, but their relative frequency throughout Herrmann’s scoring in particular and Western music in general makes the mappings less distinctive. My audiovisual correspondences also resemble doubles, albeit between media instead of within a medium. Moreover, my close, even fussy, attention to details in arguing for these three correspondences is intended not only to achieve a relatively high distinctiveness, but also to strengthen the correspondence between the audiovisual correspondence and the film’s story.

[7.6] Just as the main title’s visuals (camera motions across a face, then rotating Lissajous figures) and music (A chords, then B chords) divide into two parts, *Vertigo*’s narrative divides into two parts. In the first part, Scottie’s old college acquaintance Gavin Elster hires Scottie to watch and record every detail of his wife Madeleine as she travels in a near-trance around San Francisco. Scottie falls in love with Madeleine, but she does not reciprocate, and she dies. In the second part, Scottie meets Judy, recreates her into the likeness of Madeleine, and realizes that Judy, by pretending to be Madeleine, conspired with Elster in the first part to cover up Elster’s murder of his actual wife. Judy reciprocates Scottie’s love, but then dies accidentally.

[7.7] I interpret Bass’s camera motions in the first part of *Vertigo*’s main title as reflecting Scottie’s behavior during the first part of *Vertigo*’s story: watching and recording every minute detail of Madeleine. Bass’s main-title camera stations parallel Scottie’s observation stations: restaurant, flower shop, art gallery, cemetery, San Francisco Bay. I interpret Herrmann’s harmonic progression in the second part of *Vertigo*’s main title (B chords) as reflecting Scottie’s behavior in the second part of *Vertigo*’s story: a re-creation of this detailed recording of Madeleine in a new form. With each harmonic shift among Herrmann’s main-title B chords—a slight fifth-based darkening, then a significant third-based brightening, and so forth—there increases the potential for realization that one has born witness to these motions before, but through the sense of sight, toward images held at a distance. However, recast in sound, these motions envelop the witness, reduce this distance to zero—physically, psychologically, and emotionally—and transfigure the original relationship. Therefore, as Herrmann asserted for the main title of *Psycho*, this two-part image-to-sound transformation within the main title of *Vertigo* sets the stage for the two-part Madeleine-to-Judy drama to follow.

8. Conclusion

[8.1] In this article, I have proposed three ways in which Bass’s and Herrmann’s contributions to the main title of *Vertigo* correspond with one another: through motion from one position to another within a space, through transformations of objects situated in this space, and through the particular topological contortion of this space itself. I have also suggested how these correspondences relate to *Vertigo*’s narrative. As aforementioned, one could analyze and interpret Bass’s main-title visuals, or Herrmann’s main-title music, or *Vertigo*’s narrative independently from the other artworks. Nonetheless, one point of view holds that analysis and interpretation of an artwork inherently involves other artworks, including those outside of the original medium. The literary critic Harold Bloom once claimed that “the meaning of a poem can only be another poem, a poem not itself,” (1973, 70) and the music theorist David Lewin (1986) recommended revising this to “the artwork can only be perceived in the making of another artwork, an artwork not itself” (381, paraphrasing), providing multiple examples in which the two artworks belong to different modes of expression. From this perspective, Herrmann perceived Bass’s visuals and Hitchcock’s film by making musical art, and both artists perceived *Vertigo*’s narrative by making musical and visual art. By extension, those seeking to better understand a multimedia work are well justified in perceiving Herrmann’s, Bass’s, or Hitchcock’s art by remaking in another manner of presentation—performing, recomposing, drawing, animating, re-enacting—not only Herrmann’s, Bass’s, or Hitchcock’s artwork but also the other accompanying artworks that were created in response to its perception.

In an important way, multimedia gives us a readymade example of the kind of analysis that Lewin championed, one with re-creation at its heart.

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Footnotes

1. The original manuscript is part of the Bernard Herrmann Papers collection at the University of Santa Barbara. Published reductions vary regarding details of pitch content. Dan Blim (2013) names chord A4, minus the recurrent high arpeggios of Example 2, the “Prelude” chord. His analysis of this chord notes how the absence of the pitch class D brings it just short of mirror symmetry, although Herrmann’s score calls for this note in the first trumpet and first oboe parts, even before it occurs again as part of the upper arpeggios in the following measure. In chord B2, Frank Lehman (2018, 154) has no B, although the pitch is sustained throughout this harmony in the third trumpet, second trombone, and vibraphone. This excision of the non-tertian B supports his observation that chords B1-B4 are isomorphic to an important four-chord progression in Hans Zimmer’s score for *Inception*, although he leaves in the non-tertian B of Herrmann’s chord B4, which also provides support for his isomorphism.

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2. As Kevin Clifton (2017, 44–45) astutely recognizes, these melodic seconds can be heard as horizontalizations of the harmonic seconds of D-C and E \flat -D within the arpeggiations.

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3. Royal S. Brown (1994, 151) dubs the minor-major seventh as the “Hitchcock chord,” although David Cooper (2005, 39) recognizes Herrmann’s use of it before his partnership with Hitchcock.

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4. On the occasion of the 1996 theatrical release of a painstakingly restored *Vertigo*, Alex Ross (1996) wrote a review of Herrmann’s music, similarly claiming that, in the opening title sequence, “Herrmann has told us what the movie is about” (also quoted at the beginning of Smith 2018).

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5. As part of her study of the roles pattern matching and metaphor play in the production of musical meaning, Candace Brower (2000, 329) visually depicts the CYCLE image schema as both a closed circular directed path and as a sinusoidal waveform.

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6. To expound upon the structure of **Video Example 1**: each of two balls on the right and bottom of the video moves through a certain length of one-dimensional space using a sinusoidal function. The ball on the bottom moves through its length 5/3 more quickly than the ball on the right moves through its length. For example, at the 1.22-second mark, the ball on the bottom is at its most right, and the ball on the right is at its bottommost. At the 3.37-second mark, the ball on the bottom is at its leftmost, and the ball on the right is at its topmost. In between these times, the ball on the bottom has swept through its length five times, while the ball on the right has swept through its length three times. The ball in the middle then maps these two one-dimensional functions onto a two-dimensional space.

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7. David Lewin (1993, 46ff.), following Jeanne Bamberger (1986) uses the term “formal,” as opposed to “figural,” for a kind of spatial network representing this atemporal ground.

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8. This is also the orientation for Leonhard Euler’s *Speculum Musicum* (Gollin 2009), albeit with the major-third axis inverted from that of Example 5.

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9. Some scholarship (e.g., Cohn 2004) proposes that a diatonic default induces the interpretation of a semitonal interval, such as A \flat to A, as a minor second, such as A \flat to B $\flat\flat$, which would invert the darker-to-brighter shift and mar the audiovisual correspondence. Nonetheless, I hear the common tone C and the preference for consonances as diatonic intervals—A \flat -C, E \flat -C, C-A, C-E—as overriding this default.

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10. However, Herrmann does use this chord in very similar music later in the film. In the “Scene d’Amour,” Herrmann begins with chords B1 and B2 with the same melody above, but the bass note A has been removed from chord B2, leaving the notes C, E, and B, which together belong to the [015] Forte type and are a 90° rotation of chords B1 and B3.

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11. This manner of rendering a chord resembles Henry Klumpenhouwer’s (2002) spatial characterization of one form of nineteenth-century dualist thought: that the pitches of both major and minor triads can be generated from a source pitch using directed perfect fifths and major thirds. Dualists considered the source pitch as the root both for major and minor triads. My approach integrates this generative method with Brown’s (2003) system of spatial equivalences.

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12. Since Herrmann writes F# for chord B6 and Gb for the following chord A1a or chord C1, one might be obliged to fuse these two pitches together as well. However, Clifton (2017, 46) interprets this enharmonicism as only visual, not also aural. Indeed, to hear chord B6 as Bb-D-Gb instead of Bb-D-F# is consistent with how augmented triads functioning as dominant triads in the minor mode are often spelled and heard as incomplete dominant minor-thirteenth chords.

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13. Something similar could be said of Blim’s (2013) mirrors and spirals: rotational forms, for example, are quite common in both Herrmann’s music and Western music. My use of the word “distinctive” here and earlier refers specifically to David Huron’s (2001) use of the word as signifying a “greater salience compared to occurrences in other artifacts.”

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