International Journal of the Dutch-Flemish Society for Music Theory

Volume 6, # II – OCTOBER 2019

MUSIC THEORY & ANALYSIS

LEUVEN UNIVERSITY PRESS

Reprint from MTA, volume 6.2 - © Leuven University Press, 2019

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Sean ATKINSON

Tonality in Steve Reich's Nagoya Marimbas

Abstract

This article explores the remarkable tonal qualities of Steve Reich's *Nagoya Marimbas*. While most of Reich's output might be considered diatonic, rarely do those collections move in tonal paradigms. But in *Nagoya Marimbas* the two melodic voices combine in various canonic patterns to create a background tonal progression in E minor. The two marimba parts are always heard in phase with one another, playing the same music but at constantly varying intervals of displacement. The result is a long introduction that establishes E minor as tonic, followed by music that features more rapid changes yet continues to reinforce E minor as a tonal center. The piece, though an outlier in Reich's harmonic language, represents an important example of late twentieth-century tonality.

Keywords

minimalism, tonality, voice leading, Steve Reich, *Nagoya Marimbas*

MUSIC THEORY & ANALYSIS

International Journal of the Dutch-Flemish Society for Music Theory

VOLUME 6, # II, OCTOBER 2019, 191–199

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<https://doi.org/10.11116/MTA.6.2.1>

Tonality in Steve Reich's Nagoya Marimbas

Sean ATKINSON

Nagoya Marimbas (1994) is an outlier among Steve Reich's compositions. While unmistakably "Reichian" in its use of stepped phasing and melodic canons throughout, the piece is unabashedly tonal in every sense of the word. Reich is known for using diatonic collections and extended tertian harmonies, but the presence of tonal function and tonal voice leading is rare in his output. The analysis of *Nagoya Marimbas* presented in this article demonstrates that not only is the same diatonic collection used throughout the work (rather than a constantly shifting collection, a feature commonly seen in Reich's *oeuvre* and highlighted in the work of Dimitri Tymoczko), but also important moments in the piece, highlighted by various musical changes in the texture and phasing, help create a piece-long tonal progression in E minor. A brief summary of the existing literature on Reich's harmonic proclivities will set the stage for the largely uncomplicated yet remarkable tonal aspects of *Nagoya Marimbas*.

In general, discussions of tonality in Reich's music revolve around the concept of shifting pitch collections, and these discussions have taken many different forms. Tymoczko engages with Reich specifically while discussing the use of scales in the context of twentieth-century music as a whole.¹ Specifically, in a discussion of *New York Counterpoint* (the first movement of which features canonic structures similar to those in *Nagoya Marimbas*), Tymoczko tracks changing scalar collections and maps their journey in geometric space. Tymoczko is careful to point out, however, that the changing collections are a "free journey through space, rather than a systematic oscillation around a single tonic region."² In other words, *New York Counterpoint* is not a tonal work, even though it is dominated by diatonic scalar collections. By contrast, *Nagoya Marimbas* features a single pitch collection throughout, and the changes during the piece reference not new scalar collections, but changing harmonies within that single collection.

1 Dimitri Tymoczko, *A Geometry of Music: Harmony and Counterpoint in the Extended Common Practice* (New York: Oxford University Press, 2010).

2 Ibid., 333.

Keith Potter considers how tonality is redefined in much of Reich's music.³ Potter takes great care in his use of the word "tonal" to describe Reich's music, as "calling the 'dominant eleventh' of *Four Organs* a 'dominant chord' at all [...] risks ascribing to it a tonal functionality that [...] it seems to singularly lack."⁴ Joseph Straus has also discussed these situations, in which tonal-like elements appear in post-tonal contexts. He identifies *key*, *key relations*, *diatonic scales*, *triads*, *functional harmony*, and *voice leading* as fundamental features of tonal music that often have post-tonal analogues.⁵ For example, the notion of a key might be replaced by pitch centricity, or octatonic collections might stand in for diatonic scales. And indeed, although *Four Organs* uses diatonic scales and extended tertian harmonies, those harmonies substitute for tonally-functional chords and do not overtly suggest a key or tonal center. Potter's subsequent discussion of *Triple Quartet* ultimately takes this approach, as he engages with the work from the perspective of tonal voice leading as a means to gain further insight into harmonic motion. Considering Reich's music more broadly, we might also consider the notion of key relations in terms of the shifting scalar collections as discussed by Tymoczko. This is what causes *Nagoya Marimbas* to stand out in Reich's musical output: by featuring a single diatonic collection (read as key) and highlighting harmonic shifts within that collection (read as functional harmony), the piece presents a harmonic structure unlike anything else in Reich's music. It is a deceptively simple organization, achieved through many of the same minimalist techniques that are the hallmark of Reich's compositional style.

The basic framework of *Nagoya Marimbas* is that of a canon in which the two marimba parts are constantly chasing each other, catching up only in the final moments of the piece, when the canon finally breaks and allows for a concluding unison. Except in the extended introduction of the work (discussed in detail below), the interval of imitation of the canon and the melody itself are constantly changing. Over the course of the introduction, the first marimba (M1) plays the same melody, shown below as Example 1, and repeats every two measures. Those two-measure units are then repeated two or three times each, as indicated in the score. The second marimba (M2) builds up to the same melody as M1 using an additive process, ultimately resulting in the first full realization of the introductory canon at m. 11. To discuss the interval of imitation, I will borrow John Roeder's beat-class

3 Keith Potter, "Harmonic Progressions as a Gradual Process: Towards an Understanding of the Development of Tonality in the Music of Steve Reich," in *Tonality since 1950*, ed. Felix Woerner and Philip Rupprecht (Stuttgart: Franz Steiner Verlag, 2017), 189–209.

4 Ibid, 193.

5 Joseph Straus, *Introduction to Post-Tonal Theory*, 3rd ed. ([Upper Saddle River], NJ: Pearson, 2005), 130.

Example 1: The M1 melody found in mm. 1–22

Example 2: The M1 melody as a harmonic reduction

terminology.⁶ In the case of m. 11, M2 is displaced from M1 by bT_6 , meaning that M2 is delayed (or metrically transposed) by six sixteenth-note pulses from M1. The changing interval of imitation (a phasing effect that Dan Warburton has referred to as *stepped phasing*) during the introduction has a significant effect on the perception of consonance and dissonance between the marimba parts.⁷

The best way to illustrate this is by first examining the melody of M1 as a compound melody, that is, a single melody made up of two or more voices. A natural dividing line exists between G₃ and A₃. A lower melody, E–G–A–G, emerges in counterpoint with a B–D–E upper voice. Example 2 presents a harmonic reduction of this compound melody. For clarity and ease of reading, the reduction is transposed up an octave, and the repeated two-measure melody is contained within a single bar. This reduction alone places considerable emphasis on the note pairs E–B and G–E, suggesting an E minor sonority. The A and D occur less frequently and act to support the other notes.

Of course, this reduction only considers M1. Example 3 aligns M1 and M2 as they appear in m. 11, where M2 is displaced from M1 by bT_6 . The diagonal lines between the staves highlight the dissonance created by this interval of displacement. When M1 is suggesting an E minor sonority, M2 is sounding the non-chord tones A and D. The emphasis of the E minor sonority is weakened by this particular displacement, creating dissonance on the strong beats of the measures.

A few measures later, M2 shifts to bT_3 , while M1 remains unchanged. This shift at m. 19 results in a new alignment of the compound melodies, shown in Example 4. In contrast to Example 3, this new interval of imitation aligns the E minor sonorities of both

6 John Roeder, "Beat-Class Modulation in Steve Reich's Music," *Music Theory Spectrum* 25/2 (2003): 275–304, <https://doi.org/10.1525/mts.2003.25.2.275>.

7 Dan Warburton, "A Working Terminology of Minimal Music," *Intégral* 2 (1988): 144..

Example 3: The M1 reduction (*top staff*) paired with the M2 reduction (*bottom staff*) at the bT_6 interval of displacement. This is the interval of displacement in mm. 11–18.

Example 4: The M1 reduction (*top staff*) paired with the M2 reduction (*bottom staff*) at the bT_3 interval of displacement. This is the interval of displacement in mm. 19–22.

marimbas, creating a sudden, audible, and striking harmonic consonance that all but confirms E minor as a central harmony for the introduction, and possibly for the rest of the composition.

This shift in the displacement interval is similar to moments found in the much earlier phase pieces by Reich. In *Piano Phase* (1967), Paul Epstein highlights the interesting harmonic ramifications of the shifting of two identical melodies.⁸ Specifically, he describes the shift between phases 4 and 5 that transitions between harmonic consonance and dissonance. There, as here, the listener becomes aware of the change, and attention shifts from the counterpoint between the voices to the harmonic implications created by the new alignment. The results in *Piano Phase* are “sudden perceptual shifts [that] occur when phasing has progressed to the point where one configuration is no longer viable and is replaced by another.”⁹ In other words, the music of *Piano Phase* (and other similar phase compositions) demands a constant reorienting of the listener’s perception. *Nagoya Marimbas*, on the other hand, uses the sudden consonant shift in m. 19 not to reorient or

8 Paul Epstein, “Pattern Structure and Process in Steve Reich’s ‘Piano Phase,’” *Musical Quarterly* 72/4 (1986): 494–502, <https://doi.org/10.1093/mq/lxxii.4.494>.

9 Ibid., 502.

Example 5: The common and metrically strong attacks of the bT_6 and bT_3 displacements of M_2 against M_1

bT_6

common attacks: x x x x x x
metrically strong: x x

bT_3

common attacks: x x x x x x x x
metrically strong: x x x x x x

invite a new way of listening, but rather to reinforce the E minor sonority and set up the background tonal progression that follows.

Of note here also is the idea of rhythmic consonance, defined as the number of shared attacks between the two marimbas. The more frequent the shared attacks, the more rhythmically consonant the parts are. Example 5 shows that when considering the overall number of shared attacks and how many of those shared attacks occur in metrically strong positions, the bT_3 displacement, in addition to its harmonic consonance, is rhythmically consonant as well. It features eight shared attacks, five of which are metrically strong, compared to only six shared attacks during the bT_6 displacement, only two of which are in metrically strong positions. I include as a common attack the moment of shared silence on the second half of beat 2 in the bT_3 displacement. The absence of an attack in both parts is just as striking, if not more so, than the common attacks in metrically strong positions. Metrically strong positions include both the downbeats and upbeats, given the sixteenth-note pulse of the music.

In summary, the introductory twenty-two measures of the piece accomplish two things. First, they establish the concept of canon and changing intervals of imitation that will

Example 6: Background reduction of the harmonic progression and voice leading in *Nagoya Marimbas*

The musical notation shows a single staff with a treble clef. It represents a background reduction of the harmonic progression and voice leading. The notes are connected by curved lines, indicating voice leading. The notes are labeled with circled numbers: 1, 39, 47, 66, and 70. Below the staff, the harmonic progression is labeled: e: i, V/iv, iv, v, i.

pervade the rest of the piece. And second, they establish E minor as a central sonority (though perhaps not yet heard as a tonic), strengthened by the sudden dissonant-to-consonant shift of the canonic displacement at m. 19. The remainder of the piece will be somewhat different, as both the canon melody and the interval of imitation change with almost every repeated unit. However, those individual units, when considered from a deeper middleground or background structural level, reinforce the E minor sonority established in the introduction.

Example 6 provides a background reduction of the entirety of *Nagoya Marimbas*. The reduction strongly suggests a large-scale tonal progression in E minor and relies heavily on the significance of the harmonies in mm. 39, 47, 66, and 70. Indeed, these moments are important arrivals during the piece, as indicated by either dynamic changes, changes in melodic contour, or a notated change of key signature.

M. 39 is preceded by the first written crescendo of the work and the measure itself is indicated as *forte*, the loudest dynamic marking up to this point in the piece. The following measures decrescendo and return to the previous *mezzo forte* dynamic. A reduction of the melody of M1 is presented in Example 7. The presence of G $\sharp$, along with emphasis on E, B, and D, suggests a harmonic interpretation of E Mm 7 , or V 7 of iv in the context of E minor. M2 plays the same melody, but displaced at the rather short interval of bT $_2$, creating what sounds more like an echo of the melody rather than an additional canonic voice and negating the need for an alignment of the reduction.

M. 47 is marked by a sudden change in melodic contour. Beginning in m. 27, the melodic line for the most part descends from the beginning to the end of the repeated unit. In m. 47 this line suddenly changes to one that primarily rises, a change that foreshadows the final rising gesture at the end of the piece. Harmonically, as shown in the reduction of Example 8, the music emphasizes an A minor sonority, or iv in E minor. The displacement of M2 here, again, is bT $_2$ and has a similar echo effect.

M. 66 is marked by a key-signature change to one sharp, further making the case for E minor as a tonal center. The reduction of the melody in that bar, shown in Example 9, emphasizes the notes B and F $\sharp$, suggesting the fifth of a v harmony in E minor; however,

Example 7: M1 at m. 39 (*above*) with the harmonic reduction (*below*)

Example 8: M1 at m. 47 (*above*) with the harmonic reduction (*below*)

the third, D, is missing. Though the note is implied in m. 66, it does appear in m. 67, confirming the B minor triad. And as with the other measures discussed, M2 is again displaced at bT_2 .

M. 70 marks the beginning of the end. As the reduction in Example 10 shows, the piece has returned to an implied E minor sonority. M2 is displaced at bT_2 , and the consistency of this particular displacement here in the previously discussed measures in the piece helps to clarify the tonal trajectory of the work. M2, rather than providing a consonant or dissonant counterpoint (as was the case in the introduction), simply echoes M1, allowing the intended sonority at that moment to sound unencumbered.¹⁰

Returning to the deep-background reduction in Example 6, and now considering the local harmonic reductions, it appears that this piece operates in E minor. The reading of E minor as a tonal center corresponds with observations suggested by James Ieraci.¹¹ Ieraci

¹⁰ The interval of displacement changes frequently throughout the piece. The maximum amount of displacement is bT_{12} , which occurs frequently in the measures immediately before m. 39. The bT_2 displacement, though present in each of the examples discussed, is also the most frequently used displacement in the work.

¹¹ James Ieraci, "An Analysis of the Minimalist Techniques in Steve Reich's *Nagoya Marimbas*" (Ph.D. diss., University of California, Santa Barbara, 2005).

Example 9: M1 at m. 66 (*above*) with the harmonic reduction (*below*) Example 10: M1 at m. 70 (*above*) with harmonic reduction (*below*)

simply collects the note groupings from various measures in the piece and attributes them to an ever-changing modal collection; only in passing does he suggest a possible functional relationship between them. This is similar to Tymoczko's and Potter's approach of identifying many different scalar collections throughout a work. And while that approach works for the vast majority of Reich's output, especially pieces written since *Music for Eighteen Musicians*, it would needlessly obscure the relatively simple presentation of tonality in *Nagoya Marimbas*. Potter ultimately acknowledges that "constructing an overarching 'theory of post-minimalist tonality' [...] will require the deployment of a range of analytical methods previously applied to a variety of different kinds of music."¹² Indeed, it appears that Reich's music engages with tonality across a wide spectrum, and *Nagoya Marimbas* exists closer to the realm of tonality than either his previous or his subsequent work.

Though *Nagoya Marimbas* appears to be an outlier, it represents an important marker in Reich's relationship with common-practice tonality. It demonstrates that the same

¹² Potter, "Harmonic Progressions," 207.

compositional tools that operate in works such as *New York Counterpoint* or *Four Organs* (just to name two of many similar kinds of pieces) and contribute to the harmonic yet non-tonal landscape of those pieces can easily be adapted to craft a largely tonal composition such as *Nagoya Marimbas*. In terms of the compositional techniques themselves, Reich states that the process of stepped phasing and canon is “similar to [that employed in earlier] pieces from the 1960s and 1970s,” but *Nagoya Marimbas* incorporates “patterns [that] are more melodically developed, change frequently, and each is usually repeated no more than three times, similar to my recent work.”¹³ This blending of older and newer styles, which ultimately contributes to the tonal landscape in which it is written, gives the piece a unique place in Reich’s output—a piece that contains all the markers of Reich’s minimalist style and comfortably interacts with common-practice tonality.

Abstract

This article explores the remarkable tonal qualities of Steve Reich’s *Nagoya Marimbas*. While most of Reich’s output might be considered diatonic, rarely do those collections move in tonal paradigms. But in *Nagoya Marimbas* the two melodic voices combine in various canonic patterns to create a background tonal progression in E minor. The two marimba parts are always heard in phase with one another, playing the same music but at constantly varying intervals of displacement. The result is a long introduction that establishes E minor as tonic, followed by music that features more rapid changes yet continues to reinforce E minor as a tonal center. The piece, though an outlier in Reich’s harmonic language, represents an important example of late twentieth-century tonality.

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13 Steve Reich, *City Life / Proverb*, liner notes, Nonesuch 79430-2, 1996.