UNIVERSITY OF CALIFORNIA

Los Angeles

Music as a Gradual Lostness:

A Performer's Guide to the Phase Music of Steve Reich

A dissertation submitted in partial satisfaction of

the requirements for the degree Doctor of Musical Arts

by

Kelly Lawrence Flickinger

2012

ABSTRACT OF THE DISSERTATION

Music as a Gradual Lostness:

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Kelly Lawrence Flickinger

Doctor of Musical Arts

University of California, Los Angeles, 2012

Professor Gordon Henderson, Chair

Steve Reich's phase pieces *Drumming* and *Piano Phase* continue to test performers. Challenges include developing a successful phase, determining audible and visual checkpoints, and defining the role of the steady player. In this dissertation, detailed rehearsal and performance techniques of Steve Reich and Musicians are described using information obtained through the author's interview with Russell Hartenberger, an original member of the ensemble Steve Reich and Musicians. While the methods of Steve Reich and Musicians and the author overlap in many respects, one significant difference separates the two: the "Cognitive Pulse Alignment" (CPA), or mental alignment of the beat within the measure, of the performers. Unlike the "Displaced Pulse Method" (DPM) of Steve Reich and Musicians, where the performers perceive beat one in different locations than each other within the phase pieces, this

paper introduces the "Unified Pulse Method" (UPM), an approach that unifies beat one among the players. A combination of UPM and other techniques results in a comprehensive guide to rehearsing and performing the phase pieces of Steve Reich, and an overall enhancement of the performer’s conception of musical time.

The dissertation of Kelly Lawrence Flickinger is approved.

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2012

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EDUCATION

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Contemporary Performance Practice, Romantic Performance Practice, Classical Performance Practice, Instrumental Pedagogy, Music Technology, Music Analysis, Music Theory, Music History, Development of Jazz, Cultural History of Rap, Music of Latin America, Music of J.S. Bach, Writing about Music, and Music Business.

MAJOR TEACHERS

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TEACHING EXPERIENCE

HEAD PERCUSSION INSTRUCTOR
UCLA Bruin Marching Band; Los Angeles — *2007-present*
- Music arranger and instructor for pregame and halftime shows.
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UCLA Department of Music; Los Angeles, CA — *2009-2011*
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- Auditioned prospective members of the Wolf Pack Marching Band.
- Prepared the band for pregame and halftime shows.
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PERCUSSION INSTRUCTOR/ASSISTANT CAPTION HEAD
Pacific Crest Drum and Bugle Corps; Diamond Bar, CA — *2007-2010*
- Helped establish a new technique program for the percussion section.
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Horwang School; Bangkok, Thailand — *2008, 2010*
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American Idol on Fox Television with James Durbin	*2011*
Blues for Gilbert by Mark Glentworth Guest Soloist with the Santa Monica College Percussion Ensemble	*2011*
27th Annual Ekitopia Festival Parade; Nagoya, Japan	*2010*
Concerto for Vibraphone and Percussion Ensemble by Ney Rosauro Soloist with the UCLA Percussion Ensemble	*2009*
Marimba Spiritual by Minoru Miki Soloist with the UCLA Percussion Ensemble	*2009*
KROQ Almost Acoustic Christmas Show designer with Linkin Park	*2008*
International Chinese New Year Night Parade; Hong Kong	*2008*
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Santa Clara Vanguard Drum and Bugle Corps; Santa Clara, CA	*2006*
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UCLA Philharmonia at LACMA

True Blue - UCLA Bruin Marching Band

UCLA Bruin Marching Band interview and feature on vicfirth.com

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Percussive Arts Society

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Music as a Gradual Lostness:

A Performer's Guide to the Phase Music of Steve Reich

"It was the kind of music, and it still is, that either you get it or you don't, or you like it or you don't, and you have a knack for playing it or you don't.

Russell Hartenberger on the phase pieces of Steve Reich[1]

A Process Without a Process

To my knowledge, no practical method for approaching and rehearsing the phase-shifting pieces of Steve Reich has ever been published. Although the phase-shifting process is approximately forty years old and the works that embody it are frequently performed, its execution in performance continues to challenge performers both mentally and physically. The concept itself is simple. Using the piece *Piano Phase* as an example, two people begin by repeating a one-measure unison pattern of sixteenth notes at a relatively fast tempo. Then one performer plays slightly faster (phases) while the other remains steady, playing out of sync until the faster player arrives one note ahead in the pattern, locking back into rhythmic unison with the steady performer after four to sixteen repetitions of the pattern. The phasing musician is now playing the second note of the original pattern as the steady performer plays the first.

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[1] Daniel Tones, "The Music of Steve Reich: An Interview with Russell Hartenberger" (Percussive Notes 45.4 August 2007) 23.

The process is repeated for every note of the pattern until the players end up back in unison on the original pattern. Although this sounds like a simple procedure, successfully executing the phase-shifting process is difficult, and despite the many available descriptions of the phase-shifting process, none provide a comprehensive method for practice and execution.

I vividly remember the day in my graduate seminar on contemporary performance practice when my professor asked for two volunteers to attempt to read through some of *Piano Phase* by Reich. When only one pianist showed the interest to give it a shot, I gladly raised my hand to try. I was only slightly familiar with the piece at the time, and I was out of practice as a pianist, but I was excited to try the process my professor described. I deferred the phasing part of player 2 to the more experienced pianist, even though it was the part I actually wanted to try. After quickly fumbling through the patterns on our own, we unsuccessfully tried the first phase. A second attempt was also unsuccessful. Under the recommendation of a classmate, we switched parts; it was my turn to attempt the phase. I could do it and was hooked. We left the piano with two very different reactions: the pianist mumbling, and me with a newfound interest.

Soon after class, I decided to play Reich's phasing masterwork, *Drumming.* When I began working on *Drumming,* I was extremely confident that a quick web search would lead to at least one performer's method for practicing and learning the piece, but very little surfaced. Although a few articles in the *Percussive Notes* database were devoted to the phase music of Reich, none described how they did it.

So what do people do when nobody can provide them with the right tool for the job? They make their own. During rehearsals I developed my own approach to the music, which I then shared with the other performers. We had a rehearsal method by which to perform this music more comfortably and effectively. So why hadn't other musicians written about their own ideas before? Surely I was not the first person in forty years to produce a comprehensive approach. After conducting an interview with Russell Hartenberger, a founding member of Steve Reich and Musicians, I confirmed my suspicion; they did have a method. While I found many similarities between Hartenberger's thoughts and my own, the core of them differs significantly. Both approaches are included here in an attempt to aid future musicians in their search for a practical guide for the phase pieces of Reich.

The Emerging Music

The phase pieces of Reich still sound fresh to new ears, but they cannot be fully understood without a recognition of the mid-twentieth-century zeitgeist. New ideas in the sciences were changing the world's view of what was possible in the realm of time, space, and evolution, setting new ideas in other fields into motion. In music, words such as "music," "time," and "percussionist" began to evolve. Rhythm would be at the forefront of this revolution, led by composers such as Carlos Chávez, Amadeo Roldán, Henry Cowell, Terry Riley, and John Cage in the 1930s. Elliott Carter pointed out it was "Varèse, [who] perhaps following the direction initiated by Stravinsky, made rhythm the

primary material of this musical language."[2] It was Cage who wished to step back from pitch and harmony, toward liberating noise; later composers would move toward minimalism.

Edward Strickland's book, *Minimalism: Origins,* provides a wealth of information regarding the history of the genre. Strickland claims that Morton Feldman's *Piano (Three Hands)* and *Piece for Four Pianos* of 1957 could be considered the first minimalist compositions for their "restrained dynamics" and "spare texture." [3] It would be over a decade until the term "minimalism" would appear in music criticism. Reich gives credit to Michael Nyman and Tom Johnson for its first use in the 1970's.[4] This new approach came at a time when complexity was prized in music. Strickland explains, "Composers like Milton Babbitt . . . seemed to regard inaccessibility as mandatory, if not virtuous."[5] The composers emerging in this new genre — La Monte Young, Terry Riley, Philip Glass, and Reich — were composing music that seemed diametrically opposed to the world of serialism in which they were trained, and they were not greeted with open arms by the world of Western classical music. Young's teacher, for example, arranged for a performance of Young's *Trio for Strings*, a piece comprised of long sustained tones and silences, simply to show him the error of his ways. Later Young described the audience reaction as "polite bewilderment."[6] Critics would go on to describe Young's

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[2] George Frock, "*Ionisation*, An Analytical Interpretation" (Percussive Notes 25.5 Summer 1987) 31.

[3]Edward Strickland, *Minimalism--origins* (Bloomington: Indiana UP, 1993) Print.

[4] Strickland 18.

[5] Strickland 120.

[6] Strickland 121-122.

work as “unutterably boring” and there are reports of audience members walking out of performances “barely suppressing hysterical laughter.”[7] Riley remembers a professor being outraged to tears after one performance of *Poem for Tables, Chairs, Benches, etc*.[8] Despite such reactions to minimalist compositions from many serialist composers, Strickland points out that minimalism would not have emerged “but from the intricate ground of academic serialism.”[9] He explains that “Young’s *Trio* emulated in long tones the Serial presentation of the tone-row,”[10] but also specifies that “despite its serial underpinnings, nothing like Young’s Trio for Strings had ever been heard in Western music.”[11] Young claimed, “what for Webern would have taken a few minutes, for me takes about 52 minutes.”[12] Young was attempting to “make the serial technique synonymous with the audible structure of the work,” a technique that would eventually become the underlying principle in the works of Reich.[13] The effect of Young’s music was undeniable. Riley stated that after hearing Young’s music, “You're never quite the same afterwards.”[14] It was Riley’s reintroduction of tonality and repeating music modules that set him apart.[15] This was at a time when tonality was considered an

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[7] Strickland 122.

[8] Strickland 136.

[9] Strickland 120.

[10] Strickland 120.

[11] Strickland 121.

[12] Strickland 126.

[13] Strickland 126.

[14] Strickland 122.

[15] Strickland 133.

unacceptable means for composition. Reich remembers, “If you wrote really tonal music in 1962-63, people would laugh at you. They would consider you a fool.”[16] At the encouragement of Luciano Berio, however, Reich followed his heart and began writing tonal music. He was, after all, heavily influenced by Bach, Stravinsky, and Bebop artists Miles Davis and John Coltrane as a teenager. Reich’s favorite Coltrane recording, *Africa Brass*, “is basically E for half an hour.” Reich stated, “Well you’d say, ‘That’s impossible. That’s got to be boring.’ But it wasn’t.”[17] Those exact words could be used to describe much of Reich’s own work. The work of Coltrane clearly affected Reich’s compositions, as seen in Reich’s following description of his piece *Drumming*. He believes, “*Drumming* shows that it is possible to keep going in the same key for quite a while if there are instead considerable rhythmic developments, together with occasional, but complete, changes of timbre to supply variety.”[18] Notice how the title of *Drumming* seems almost interchangeable with *Africa Brass*.

The Emerging Percussionist

Composer and John Cage biographer David Revill described the early twentieth century as “a time when percussion was so marginal that it wasn’t even important enough to be the subject of drummer jokes.” In the mid-1930s, Cage had to use

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[16] *Phase to Face*, Dir. Eric Darmon and Franck Mallet. Perf. Steve Reich (Euroarts, 2011) DVD, 7:40.

[17] *Phase to Face* 9:50.

[18] Steve Reich and Paul Hillier, *Writings on Music, 1965-2000* (Kindle Edition) 66.

"dancers and bookbinders" to play in his percussion ensemble due to lack of interest from trained percussionists.[19] The classical percussionist of the early twentieth century was much different than one today. As percussionist Steven Schick points out, "What separates [previous] music from today's percussion music is not the amount of noise it made, but how that noise was used."[20] Percussion was used then as a reinforcement of other instrument's "large-scale timekeeping functions of formal and harmonic demarcation."[21] The shift from this method was not sudden. The wheels were already set in motion in works by composers such as Beethoven and Berlioz. The role of the "percussionist" was taking a new form: a role more than simply that of timekeeper and rest-counter. Percussionists would soon get the same attention that keyboardists, singers, and string players had been getting for centuries. Composers collaborated with percussionists, expanding the possibilities of the instruments. Percussionist Jan Williams explains that it was his collaboration with composer Elliott Carter on "*Eight Pieces for Four Timpani* that led to the complicated playing techniques such as beating spots, harmonics, stick choice, [and] dampening within the pieces."[22] It was Reich's collaboration with the percussion group Nexus that helped shape some of his percussion works. A different percussionist emerged by the time Reich wrote *Drumming* in 1970, as described by Hartenberger in the following quote:

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[19] David Revill, "John Cage" (Percussive Notes 37.5 October 1999) 73.

[20] Steven Schick, *The Percussionist's Art Same Bed Different Dreams* (University of Rochester Press, 2006) 1-2.

[21] Schick 2.

[22] Jan Williams, "Elliott Carter's 'Eight Pieces for Timpani' - The 1966 Revisions" (Percussive Notes 38.6 December 2000) 8.

> In the 1970s, when we first started rehearsing and performing *Drumming*, the percussionists who were drawn to this music were players who were not following in the traditional career paths of full-time symphony orchestra musicians. Some of us were involved in the new wave of professional percussion ensembles being formed in North America around that time with Nexus beginning in 1971 and The Blackearth Percussion Group starting shortly after that. Jim Preiss was teaching at Manhattan School of Music, playing contemporary music, and turning out students who had a wide variety of musical interests. One of these students, Glen Velez discovered South Indian kanjira and overtone singing and created a new frame drum art form. The singers were ones who specialized in early music, new music, and/or jazz, and not ones who sang the romantic or operatic repertoire. Musicians with these backgrounds not only were able to perform the music in the style that Steve wanted, but were also musicians who found the music intriguing to perform.[23]

Hartenberger points out, "the kind of virtuosity that is required for Steve's music is of a different kind than the virtuosity that most accomplished musicians in the classical western tradition develop. Thus many highly skilled performers were not able to adapt to the requirements of this music with steady pulse, repetition, and a different kind of focus and concentration."[24] However, performers with a background in generally non-notated musics (music generally outside of the Western classical tradition) had experience playing music with similar demands. Yet even performers knowledgeable in world music had never experienced what Reich would do with phasing.

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[23] "Russell Hartenberger on the Phase Music of Steve Reich," E-mail interview, 13 Oct. 2011.

[24] Hartenberger.

The Phase Pieces

A. Tape

Two identical tape loops played at different speeds would set Reich's career on a new path. Using tape as a compositional means was not uncharted territory by the time Reich employed it. Edgard Varèse used tapes in his *Déserts* for winds, percussion and two magnetic tapes and *Poème électronique* for magnetic tapes. Riley had spent time working with tape loops at the San Francisco Tape Music Center.[25] Use of different tempi had also been employed in works such as Cage's *Imaginary Landscape No.1,* Stockhausen's *Zeitmasse*, and Riley's *Spectra*.[26] Reich's utilization of tape was different. The first major piece for tape that resulted from his experiments was *It's Gonna Rain*, in which Reich describes that "two loops (of a preacher) are lined up in unison and then gradually move completely out of phase with each other, and then back into unison."[27] Reich actually discovered the phasing process by accident. Two identical recordings were on two separate tape recorders and when he pressed play he remembers that "miraculously the two were lined up in unison . . . but not exactly."[28] He remembers, "I began to hear the sound move from this side of my head, to this side of my head . . . the loop coming in the left earphone was a little bit shorter and was moving slowly faster than the other one, which you perceive as a movement in space."[29] What

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[25] Strickland 137.

[26] Strickland 125.

[27] Reich, *Writings* 327.

[28] *Phase to Face* 14:35.

[29] *Phase to Face* 15:40.

struck Reich was the process through alternating rational and irrational relationships between the loops until they arrive back in unison. He would later come to call this his "phase-shifting process." Reich used this technique with tape further in his pieces *Come Out* and *Melodica*. After his tape pieces, Reich found himself with an inner conflict. He thought, "Enough with tape. I don't want to spend the rest of my life with tape. But this process, people can't do it."[30] He wanted to write instrumental music, but he thought people would be unable to phase. After making a recording of himself playing a pattern on the piano and attempting to play with it, he discovered, "Wow, I can do it."[31] This pattern then became the material for the first section of *Piano Phase*.

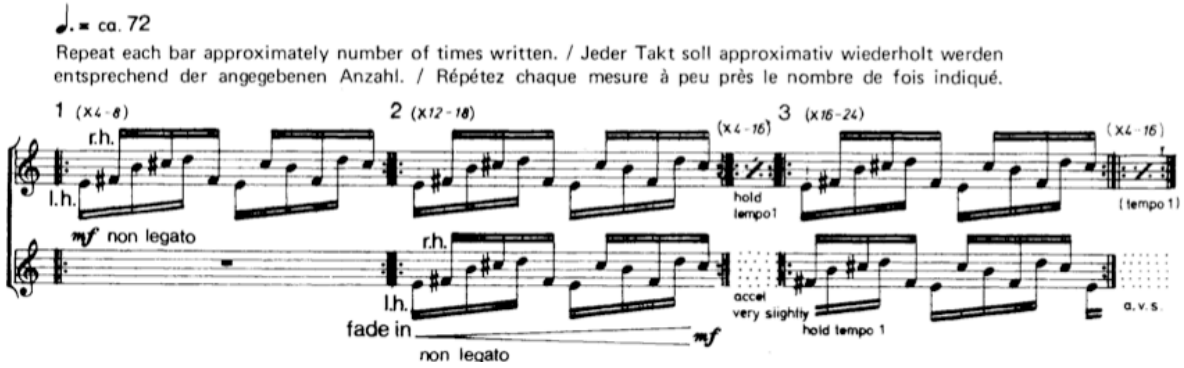
B. Piano Phase

In *Piano Phase for 2 pianos or 2 marimbas*, a musician begins by repeating a twelve-note pattern of sixteenth notes. Reich gives the performers a range of repetitions for each step of the process, letting the performer decide exactly how long the process should be. After four to eight repetitions, the second player then fades in with the same pattern in unison. After twelve to eighteen repetitions as decided by the performers, the second player plays slightly faster until he/she arrives one sixteenth note ahead of the other player and locks back in rhythmic unison, taking anywhere from four to sixteen repetitions by the steady player to do so. This is the phase, and if played at the written tempo of dotted quarter equals seventy-two, it will take around seven to twenty-seven seconds to complete. The two players remain in rhythmic unison for sixteen to twenty-

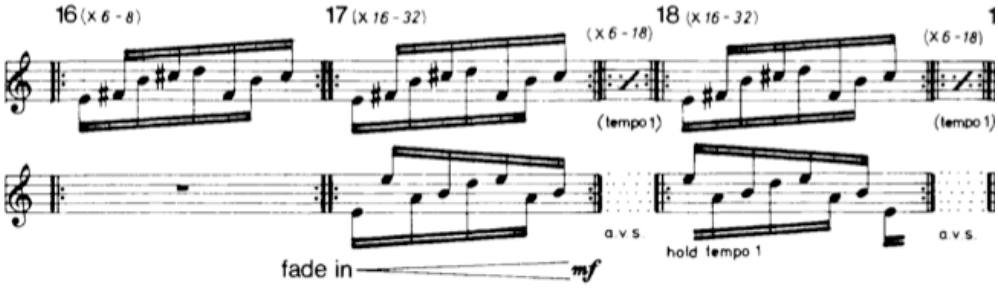
[30] *Phase to Face* 16:45.

[31] *Phase to Face* 17:40.

four repetitions, also determined by the performers. At this point, the second player is playing the second note of the original pattern as the first player plays the first note of the original pattern. The exact number of all repetitions is decided by the performers. This process continues for all twelve notes of the pattern until the players arrive back in unison on the first pattern. The process continues with an eight-note pattern and finally a four-note pattern, each with a different range of recommended repetitions.



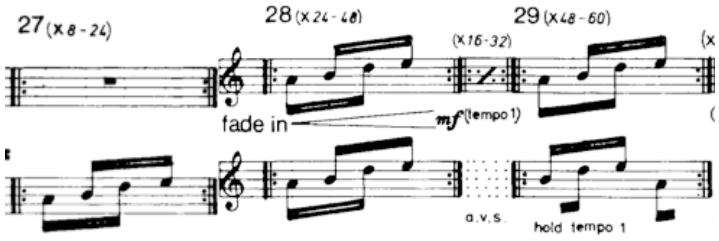
Piano Phase section 1 excerpt.[32]



Piano Phase section 2 excerpt.[33]

[32] Steve Reich, Piano Phase for 2 pianos or 2 marimbas (1967) (London: Universal Edition Ltd) 1980, Print, 2.

[33] Reich, Piano Phase 3.



Piano Phase: section 3 excerpt.[34]

C. Drumming

Reich began studying drums at the age of fourteen, but when asked about being a percussionist, Reich humbly laugh, “I consider myself a composer first, second, and third. And then a percussionist.”[35] It was a concert he attended that eventually inspired him to choose bongo drums for the opening section of *Drumming*. Reich remembers, “A percussionist named Bobby Thomas played stand-mounted bongos with sticks. At the time I thought, ‘What a great sound!’ and then I forgot about it.”[36] His famous, and often misunderstood, trip to Ghana confirmed his belief that writing for percussion was a viable option. Reich explains, “What happened in Africa was as if someone pats you on the back and says 'it's ok. It's ok to make music with primitive percussion instruments.’”[37] Combining his phasing techniques and the sound of the bongos, Reich created the first part of *Drumming,* the pinnacle of his phasing experiments.

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[34] Reich, Piano Phase 2.

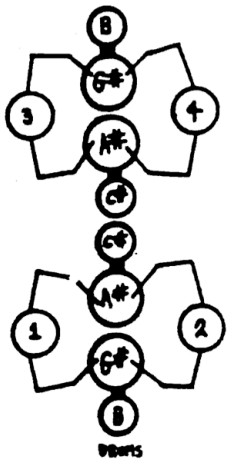
[35] Lauren Vogel Weiss, “Steve Reich” (*Percussive Notes* 45.4 August 2007) 21.

[36] Weiss, Steve Reich 21.

[37] *Phase to Face* 6:20.

Reich used four new techniques in *Drumming:* (1) the process of gradually substituting beats for rests (or rests for beats), (2) the gradual changing of timbre while rhythm and pitch remain constant, (3) the simultaneous combination of instruments of different timbre, and (4) the use of the human voice to become part of the musical ensemble by imitating the exact sound of the instruments.[38] Lasting up to seventy-five minutes long, the performance time for *Drumming* can vary widely as the number of repeats within the piece is left to the discretion of the performer. The instrumentation consists of four pairs of pitched bongo drums (two pairs shared among players as seen below), three marimbas, three glockenspiels, three female singers, and one piccolo, allowing for as many as seventeen performers. For this discussion, the first section of the piece will be addressed, which involves only the bongo drums.

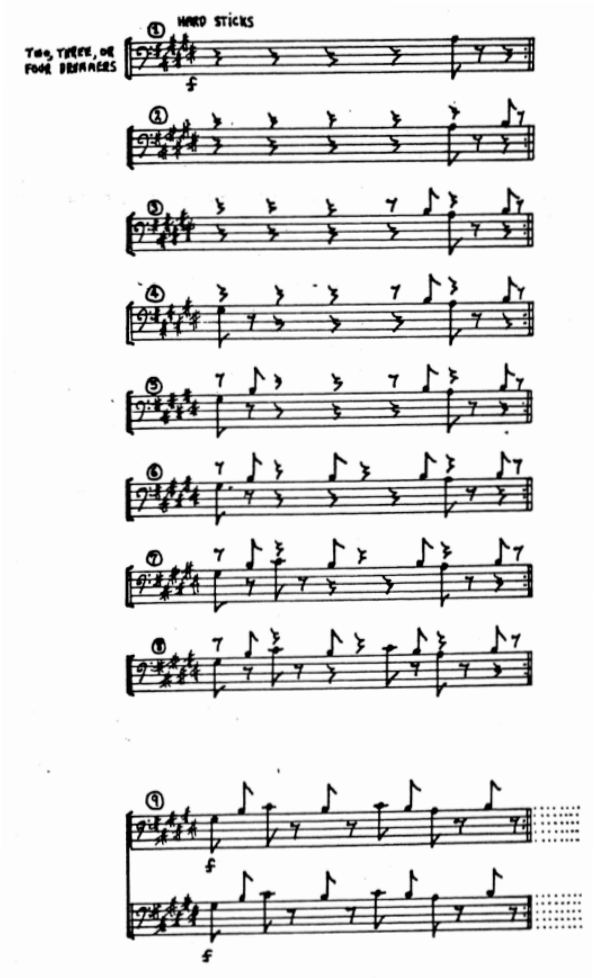
[38] Reich, *Writings* 64.

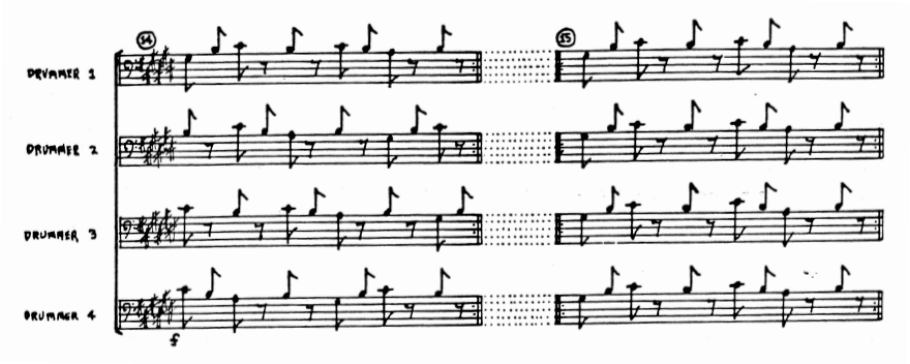


Set-up for the first section of *Drumming*. Two players share four bongo drums.[39]

In the first section, the basic twelve-beat motif is built from the ground up by one percussionist, with another player immediately following. Once all of the motivic material has been presented, the phasing ensues. Indicated by dotted lines, one player plays a bit faster until arriving at a point one beat ahead of the other player. Taking the phasing concept even further, Reich has additional players phase, including a point at rehearsal number 14 where three players phase at the same time, placing an even higher demand on them.

[39] Steve Reich, Drumming (London: Boosey & Hawkes) 1970-1971, Print.





Top: The substitution of beats for rests in the beginning of *Drumming*.[40]

Bottom: Rehearsal 14 of *Drumming* when three performers phase at once.[41]

[40] Reich, Drumming.

[41] Reich, Drumming.

D. Clapping Music

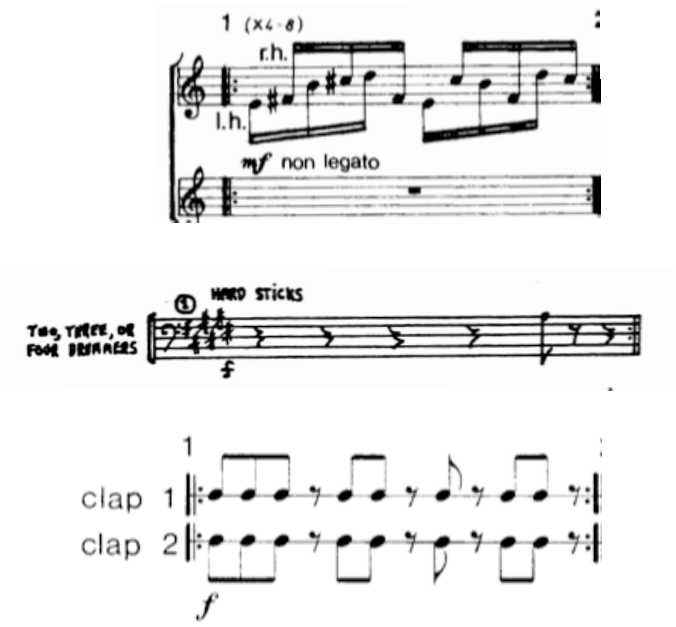
Later pieces by Reich used a simplified version of the phase-shifting process. In *Clapping Music*, instead of having one performer play slightly faster until arriving one note ahead of another musician, Reich has one player jump one note ahead directly to the next pattern after twelve repetitions. This eliminated the gradual phasing of the earlier pieces and replaced it with a more punctuated change. Interestingly, Reich did this one year after a similar process was proposed in evolutionary theory. Named "punctuated equilibrium" by paleontologists Niles Eldridge and Stephen Jay Gould, the theory claimed significant evolutionary change happens in rapid events followed by long periods of stasis.[42] This was in contrast with the generally accepted view of gradual evolutionary change. Reich's process in *Clapping Music* mirrors the theory of Punctuated Equilibrium while *Drumming* and *Piano Phase* are analogous to gradualism.

Perception

In Reich's phase pieces, what one person hears may be very different from what another person hears. These perceptions are likely to change even with future listenings of the same recorded performance. Although Elliott Carter stretched the concept of musical time with his introduction of metric modulation in his 1948 *Sonata for*

[42] Niles Eldredge and Stephen Jay Gould, "Punctuated Equilibria: An Alternative to Phyletic Gradualism," Ed. Thomas J.M. Schopf, *Models in Paleobiology* (1972): 82-115, Web.

Violoncello and Piano, the metric process was not completely audible.[43] Unlike Carter's use of metric modulation, Reich was after a music with an audible process. The metric changes in *Drumming* and *Piano Phase* are unarguably perceptible processes, and yet they can be perceived in many different ways. This intention is clear when looking at the first measures of *Piano Phase*, *Drumming*, and *Clapping Music*, in which no time signature is present.



Top: beginning of *Piano Phase*.[44]

Middle: beginning of *Drumming*.[45]

Bottom: beginning of *Clapping Music*[46]

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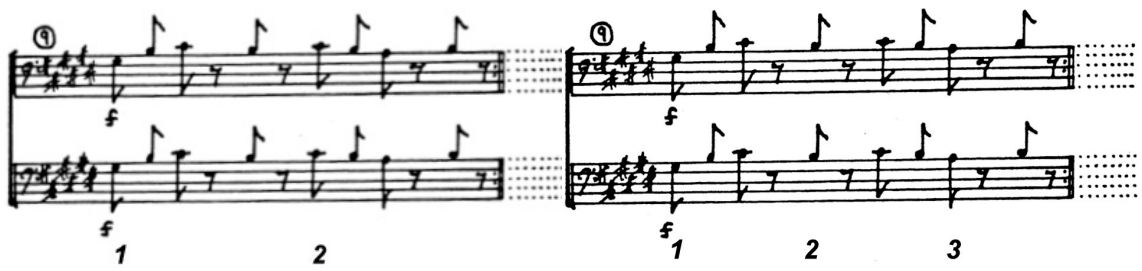
[43] Geary Larrick, "Symphonic Percussion: Metric Modulation" (Percussive Notes 27.1 Fall 1988) 46.

[44] Reich, Piano Phase 2.

[45] Reich, Drumming.

[46] Steve Reich, Clapping Music for two performers (1972) (London: Universal Edition Ltd) 1980, Print.

The three previous examples allow the performer to decide how to divide the ambiguous twelve meter. Should it be felt in three? Two? Six? If the notes are to be played unaccented, how will the audience know what the meter is? While the performer may be feeling the music in 3/2, a listener might be feeling the music in 12/8. Another listener may be feeling the music in 6/8. The perception of the meter may even change as the piece goes on. The diagram below shows how at least two meters are possible in *Drumming.*



Rehearsal 9 of *Drumming* in two different meters.[47]

As a result of the common tempo that is taken, *Drumming* is most likely felt in two or three. The ambiguity creates a varying perception, a trait desired by Reich. Similar diagrams could be made for *Piano Phase* and *Clapping Music*, the latter of which Reich feels in 3/2.[48]

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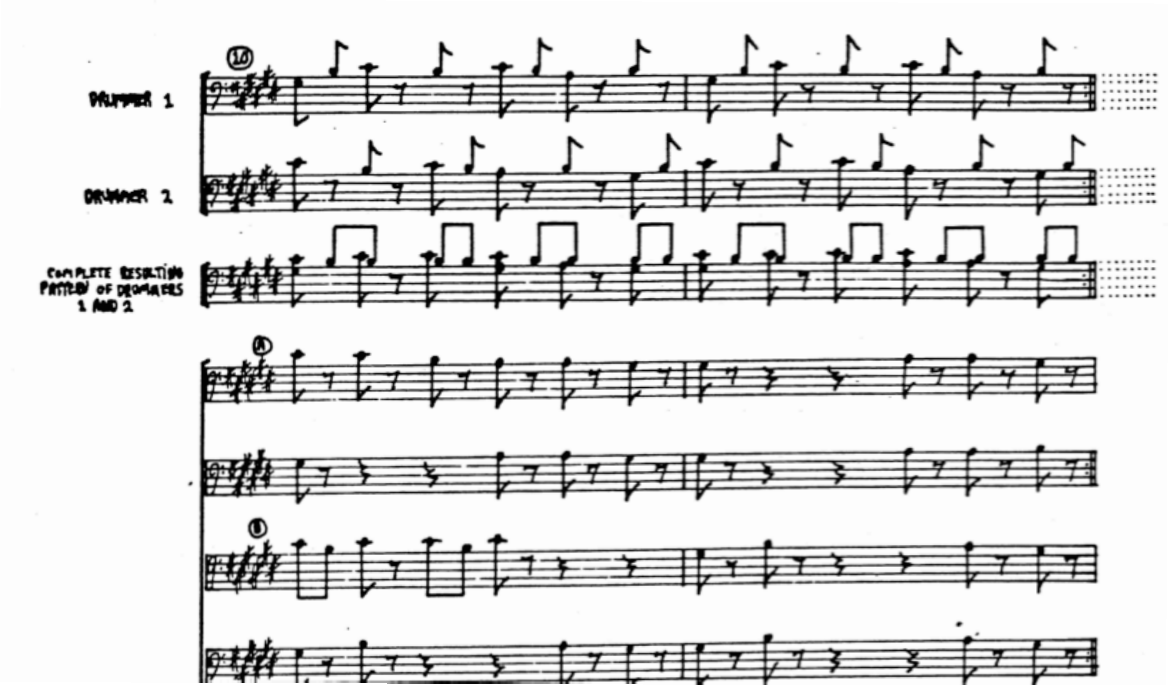
[47] Reich, Drumming.

[48] Glenn Kotche, "A Fresh Look at Reich's *Clapping Music"* (Percussive Notes 43.5 October 2005) 29.

The interlocking patterns at various points within the piece take the concept of varying perception to an even greater level in the way that they interact with each other. In *Writings on Music*, Reich describes how the interlocking patterns in *Violin Phase* create resulting patterns that the listener may hear as a melody. Reich states that "since it is the attention of the listener that will largely determine which particular resulting pattern he or she will hear at any one moment, these patterns can be understood as psychoacoustic by-products of the repetition and phase-shifting."[49] In *Drumming*, he has additional performers play resulting patterns on top of the interlocking patterns.



The bottom five lines provide resulting pattern suggestions for players 3 and 4.[50]

[49] Reich, *Writings* 26.

[50] Reich, Drumming.

In *Repeating Ourselves: American Minimal Music as Cultural Practice*, Robert Fink discusses how and why accelerando is perceived in the phase-shifting process. The first and obvious source of accelerando in the phase-shifting compositions *Piano Phase* and *Drumming* is during the phases, when one player slowly accelerates. At other times in the music, Reich creates the perception of accelerando in other ways, which Fink calls "perceptual pseudo-accelerando."[51] For example, at the halfway point of a phase, there is an "imprecise doubling of rhythmic activity."[52] This happens because the beats of one pattern land mainly between the beats of the other. This is similar to perceiving a measure of sixteenth notes as faster than a measure of eighth notes. As the phase passes the halfway point, however, there is a slowing down of rhythmic activity as the two parts approach rhythmic unison. Even though one player is accelerating to the end of the phase, it may be perceived as slowing down. Fink describes this process as being heard "simultaneously as slow (getting slower), and fast (getting faster).[53] By substituting beats for rests in the beginning of *Drumming*, the listener feels yet another accelerando, this time an additive accelerando. Fink points out that it is Reich's careful choice of which notes enter when that further pulls the music forward.[54] In *Piano Phase*, the shortening of the pattern from twelve notes, to eight notes, to four notes creates a perception of metric acceleration.

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[51] Robert Wallace Fink, *Repeating Ourselves: American Minimal Music as Cultural Practice* (Berkeley: University of California, 2005) Print, 106.

[52] Fink 106.

[53] Fink 106.

[54] Fink 106.

The perception of accelerating, decelerating, and phasing affects one's emotional reaction of the music. Just as there are many possible perceptions of melody, harmony, and time within the phase-shifting pieces, many emotional responses are also possible. In *Writings On Music*, Reich states, "While performing and listening to gradual musical processes, one can participate in a particular liberating and impersonal kind of ritual. Focusing in on the musical process makes possible that shift of attention away from *he* and *she* and *you* and *me* outward toward *it.*"[55] Perhaps it is a shift of attention outward toward "us," the performers. The phase pieces that utilize human performance are at the pinnacle of ensemble playing, requiring the utmost awareness, patience, and cooperation. The consciousness of musical teamwork begins during the infancy of the learning process, as they are generally learned by rote and as a group. The pieces are more difficult if the players attempt to "read" through them and rarely will a performer be confined to solitary practice. The entirety of the phasing process is a battle through a musical minefield. Arriving on the other side successfully is a joy that one cannot obtain alone or with a tape. Every time feels like an accomplishment. Reich describes performing *Piano Phase* in the following way: "Doing it feels very good. It's like meditating because you're just totally wrapped up in the sound of the music without being distracted by looking at the notes."[56] In both *Drumming* and *Piano Phase,* percussionists may look down while playing and feel their hands are not their own. Their hands may be moving, and yet they feel as if they are not really controlling them because the focus is on the process itself. The hypnotic repetition can be reassuring at

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[55] Reich, *Writings* 35-36.

[56] *Phase to Face* 17:40.

times, and horrifying at others, depending on the understanding of one's place within the process. Fink describes the feeling of Reich's music as a "terrifying control . . . it is syntactic control, a transformed, complex musical erotics of repetitive tension and repetitive release."[57] Each phase builds tension, which is gratifyingly released upon its resolution. Reich describes the tension in a different light, as "going through the cataclysm, you're experiencing what it's like to dissolve."[58] The patterns are forming and dissolving one after the next. A performer's lack of comfort and fear of getting lost while phasing only adds to the feeling of the apocalypse. When feeling secure, however, players can broaden their listening.[59]

In listening to most music, the audience is freer than the performers. They do not have to worry about playing the correct notes and performing a successful phase (we will get to what makes a phase "successful" later). More importantly, they do not have the music in front of them. Therefore perception of the music is mostly in the aural medium. Metric ambiguity dominates, as in Julia Wolfe's *Lick*, where the piece begins with a sporadic burst of attacks, devoid of perceptible meter. Reich points out, "Now the musicians are all counting, but you don't know that."[60] Such is the case in Reich's own phase pieces. Without being so focused on where beat one is, listeners can let their mind wander and hear the patterns in different ways. Hartenberger believes that "they can allow themselves to get caught up in the perceptual and metrical ambiguity of the

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[57] Fink 41-42.

[58] Reich, *Writings* 21.

[59] Hartenberger.

[60] *Music for Airports: In the Ocean*, Dir. Frank Scheffer (Medici Arts, 1999) DVD, 33:45.

music. They can allow themselves to get more emotionally involved in the music if they so choose."[61] Hartenberger remembers:

> Once at a performance in Vancouver, B.C. in the 1970s, I was in the lobby of the East Cultural Centre during a performance that Ed Niemann and Nurit Tilles were doing of *Piano Phase*. A guy came out into the lobby from the audience acting as if he were possessed. He may have been on an acid trip or some other kind of drug trip, but it was, nevertheless, a scary moment. One of the people who worked at the Centre went up to him and talked him down from his possessed state before he did damage to himself or anyone else.[62]

The hypnotic repetition proves to be overwhelming for some listeners, at times testing their patience, or in the case described above, their sanity. Although the previous story is extreme, it illustrates how the phase process can bring one's emotional life to the music. Reich states that it does so "through a very rigid process, and it's precisely the impersonality of that process that invites this very engaged psychological reaction."[63] Regardless of whether the process is being perceived by a performer or an audience member, the experience is a unique one, made possible by a successful phase.

Qualities of a Successful Phase

With the presence of so many indeterminate factors in the phasing process, someone might ponder what separates a good performance of *Drumming* and *Piano*

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[61] Hartenberger.

[62] Hartenberger.

[63] Reich, *Writings* 21.

Phase from a poor one. According to Hartenberger, Reich said that performers "should approach his music with the same musical sensibility that they employ in any other music" and that musicality should be "the primary consideration."[64] Hartenberger describes the musical sensibility as such:

> When I began rehearsing *Drumming* with Steve's ensemble in 1971, I was a graduate student in World Music at Wesleyan University, studying, among other things, West African Drumming. I immediately found similarities in the musical tools necessary to play each of these kinds of music successfully. In West African drumming, I learned by rote and imitation; I first had to be secure with my part; I had to fit my part into a composite pattern; I had to play without inflection; I had to fit into the time feel of the ensemble; I had to relate my part to a timeline and to other parts around me (conversation); I had to develop checkpoints so that if I got off, I would know how to get back on; I had to develop the ability to listen to the whole ensemble; I had to learn to make my physical movements fit the music; I had to learn to relax so that I could play for extended periods of time; I developed the ability to energy shift, so that I could move around points of tension within my body; I had to learn to play many repetitions of the same pattern with consistency; I had to learn a sequence of musical events aurally; I had to learn to respond to musical events at the right time and with the right patterns (call and response); I had to learn when to let my individuality come through and when to be a part of the whole; I had to become comfortable playing with metrical and perceptual ambiguity; I had to learn to play with a consistent sense of time; I had to know all the parts of the ensemble in order to fit my part in correctly and to play in the correct style of the piece; I had to learn to subjugate my own desires for the benefit of the ensemble; and I had to learn to concentrate in a different way than I concentrated in other kinds of music.[65]

For some, starting and ending *Drumming* or *Piano Phase* together is hard enough, but this by no means makes for a good performance. Reich explains that "to facilitate closely detailed listening a musical process should happen extremely gradually."[66] In other words, the phase should not be rushed and short. A good performance does not need an explanation for a first-time listener to understand the

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[64] Hartenberger.

[65] Hartenberger.

[66] Reich, *Writings* 526.

process, because the process is heard as it gradually unfolds. Many performances jump too quickly between interlocking patterns, taking only a few repetitions to change. This would generally be considered an unsuccessful phase. Successful phases, however, make subtle changes over many repetitions; such as a forty-five minute version of *Piano Phase* performed by Hartenberger and Bob Becker at Wesleyan University, in which they made the phases as long as possible. Although as Hartenberger put it, “I’m sure the performance was too long for all but hard-core Reich phasing fans.”[67]

Common Mistakes

Some common mistakes when performing the phase pieces include: overshooting or undershooting the phase, getting lost, and failing to achieve clarity during the interlocking patterns. Hartenberger believes that “the most common mistake made by players who are learning to phase is going too far in a phase and bypassing the next interlocking relationship.”[68] When this occurs, there are few options: settle back into the interlocking pattern, or go on to the next phase. Bypassing the phase can be so disorienting, however, that it might be nearly impossible to find a way out, in which case the player might phase all the way back around to the starting point. The opposite problem is also common. Sometimes performers will think that they have reached the next pattern before they have arrived there, usually because they pushed slightly ahead

[67] Hartenberger.

[68] Hartenberger.

but then settled back into the original pattern. These moments can be terrifying because performers may have no idea how to fix the problem, playing only out of muscle memory. In the phase pieces, getting lost is like driving on a freeway and not knowing which off-ramp to take. You know you are going in the right direction, but you do not know how to get to the next place. Finding your way back after getting lost in *Piano Phase* can be more difficult because each section progresses in mirror image, as Hartenberger describes:

> In the first section, the second interlocking relationship after unison sounds much like the 12th interlocking relationship. The third interlocking relationship sounds much like the 11th interlocking relationship, and so on. If you get off during the performance of the piece, you should make sure that when you get back on, you are in the correct relationship and not the one that is the mirror image and at a completely different place in the cycle.[69]

Even after forty years of playing these pieces, Hartenberger admits that he occasionally gets lost. Fortunately, he knows how to work his way out if he gets lost:

> I find that when this happens, I have to forget about the shape of the phase or about listening to the overall piece, and force my mind back to the essentials: figure out where I should be in relation to the non-moving part and get there without a stop in playing.... That is why it is important to keep your wits about you at all times, know where you are in relation to the non-moving part, or if you are playing the non-moving part, know where you are in relation to the other player(s). Performing these pieces becomes fun when you reach the point where you are secure enough with your part and secure enough with where you are at all times that you can allow your mind to listen and enjoy the composite patterns that are created. You will find that you hear the patterns differently from performance to performance and that only increases your enjoyment of the music.[70]

Quality and clarity of the interlocking patterns must not be undervalued. They are just as important to the process as the phasing. A common mistake is never completely

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[69] Hartenberger.

[70] Hartenberger.

locking into them after each phase. The arrival of the interlocking pattern should resolve the metric dissonance of the phase before it. If it is rhythmically sloppy, then the resolution is much less effective. Sloppiness also comes from uneven playing. Accenting certain notes within the pattern will create an uneven composite pattern between the two players.

Different Training

The phasing process goes against the usual training of a musician. Percussionists are taught to play together. This should not be a profound or surprising statement, but it is an important point. There is essentially no leeway in lining up the attack of two drummers. While a string or woodwind instrument generally has less attack in its sound and thus more leeway in producing what sounds like an acceptable attack between two instruments, most percussion instruments do not. An extreme case occurs in a marching band snare drum section. There may be nine drummers playing the exact same intricate part as one another with note lengths that are fractions of fractions of seconds. They are trained to make extremely quick adjustments if they hear themselves even slightly ahead or behind. Phase pieces require that one or more performers get slightly ahead and then remain in that space, avoiding their training to intuitively “correct” attacks that are not together.

Hartenberger points out, “phasing requires a lot of concentration. However it is a different kind of concentration than trying to play a difficult passage in a more

conventional type of music."[71] Hartenberger remembers, "Many highly skilled performers were not able to adapt to the requirements of this music with steady pulse, repetition, and a different kind of focus and concentration."[72] Yet even with players who were trained in music outside of the Western classical tradition, the premiere of *Drumming* required much more rehearsal than Reich's previous compositions. Reich explains that while "most new pieces of about 20 minutes in length [were] rehearsed once or twice a week for two or three months. *Drumming*, which lasts about an hour and 20 minutes, took almost a year of weekly rehearsals."[73] During these rehearsals, Reich taught the other players their parts by rote. Hartenberger describes how Reich's own playing had a real sense of style, probably from a combination of Reich's own experience with jazz and West African drumming.[74] Another factor was Reich's left-handedness, which gave the parts an interesting "stylistic nuance" when contrasted with the other right-handed players.[75]

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[71] Hartenberger.

[72] Hartenberger.

[73] Weiss, Steve Reich 22.

[74] Hartenberger.

[75] Hartenberger.

How to Phase

Knowing what a successful phase sounds like, and knowing how to successfully phase are two different things. So how does a performer actually do it? The only published advice from Reich on how the phase process should be done comes from the score of *Piano Phase:*

> When first rehearsing the piece it may be useful for the first performer to play bar 1 and keep on repeating it while the second performer tries to enter directly at bar 3 exactly one sixteenth note ahead *without trying to phase there*. After listening to this two voice relationship for a while the second performer should stop, join the first performer in unison and only then try to increase very slightly his or her tempo so that he or she gradually moves one sixteenth note ahead into bar 3. This approach of first jumping in directly to bar 3, 4, 5, etc., listening to it and only then trying to phase into it is based on the principle that *hearing* what it sounds like to be 1, 2 or more sixteenth notes ahead will then enable the performer to phase there without increasing tempo too much and passing into a further bar, or phasing ahead a bit and then sliding a bit back to where one started. Several rehearsals spread over several weeks before the performance will help produce smooth phase movements and the tendency to phase too quickly from one bar to the next will be overcome allowing performers to spend due time — the slower the better — in the gradual shifts of phase between bars.[76]

The previous excerpt gives the performer very little information from the composer about approaching the phasing process except that the process should be slow, and that the performer can develop a solid understanding of the interlocking patterns by starting directly on them without phasing. Everything else is left to the performer to figure out. When it actually came to phasing, Hartenberger remembers, **"**Steve never spoke to us in detail about how we should approach phasing from a technical standpoint. We had discussions about the specifics of the process, but there

[76] Reich, Piano Phase 1.

was not much instruction about how it should be done."[77] Most of Hartenberger's understanding of how to phase simply came from listening to how Reich and Arthur Murphy phased in *Drumming* and *Piano Phase*.[78]

One main difference separates my approach and Hartenberger's: the "Cognitive Pulse Alignment" (CPA) of the performers. This term refers to how the beat placement is perceived by the performer of the phase. Hartenberger suggests that the phasing player think of beat one of the original pattern as beat one for every pattern. He suggests, "When you have phased and created a composite pattern, you should hear the composite pattern in a way that allows you to keep your sense of 'one' on the first note of the basic pattern."[79]

Using the opening of *Piano Phase* above as an example (as seen on the following page), it would mean that even though player 2 has an F# on beat one of measure 3, beat one is felt as the last note (an E natural) of the measure. That same E natural would be felt as beat one by player 2 throughout all of the phases. One advantage of this approach is that the performer playing the phase only has to learn one version of the pattern and not all of the variations of the pattern as it appears in the music. As a result of this approach, however, player 1 and player 2 only perceive beat one as being in the same place as each other when they are playing in unison. During the majority of the piece, the players have a different beat one. This is the "Displaced Pulse Method" (DPM). If a player gets lost using this method, it can be very difficult for

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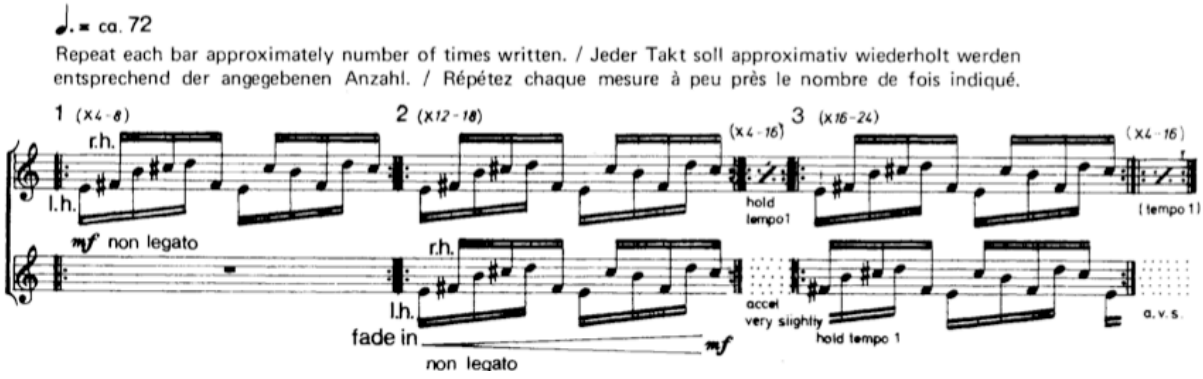
[77] Hartenberger.

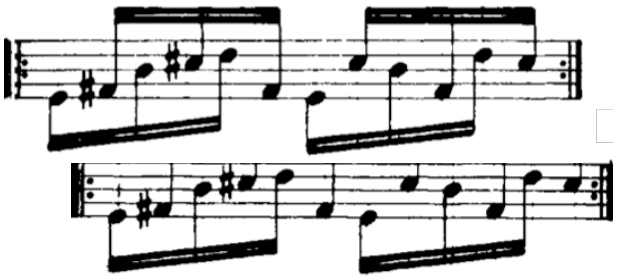
[78] Hartenberger.

[79] Hartenberger.

them to find the way out because: (1) he/she can't look to the other player to find the beat since they are perceiving the beat in different places, and (2) he/she might forget which phase is being played because the pattern is perceived the same way for every phase.



Opening of *Piano Phase* as written.[80]



Rehearsal 3 as it is perceived by player 2 (bottom staff) using DPM.[81]

My approach, the "Unified Pulse Method" (UPM), attempts to unify beat one for both players. This adds an extra level of security for performers. If a player loses track of the beat while playing the pattern, beat one can be found with a simple head nod

[80] Reich, Piano Phase 2.

[81] Reich, Piano Phase 2.

from the other performer on beat one. Regardless of whether DPM or UPM is used, many of the same techniques for phasing can be implemented with slight modification. The following section will describe the techniques used by Steve Reich and Musicians, Nexus, and myself to successfully perform the phase music of Reich. While there is overlap between the approaches, some significant differences will be discussed in detail later.

As a starting point, both players should be very comfortable with the pattern before they begin to phase.[82] When using UPM, performers will want to be comfortable with all of the variations of the pattern, feeling beat one on the appropriate note. When playing in unison, both players should match style and interpretation. When Reich plays *Drumming*, for example, he has a particular stylistic nuance, perhaps due in part to his jazz drumming background and his left-handedness.[83] These stylistic differences can give life to the piece, but only if all of the performers are in agreement. Each composite pattern should sound completely even and practiced to develop such a sound. Performers must know the composite pattern well enough to jump back in if they get lost or an unforeseen difficulty creates a hiccup in the playing, such as sticks getting caught up or hitting each other. Remembering certain resulting patterns within the composite pattern can be helpful in this regard, as it creates a way of differentiating the patterns and keeping track of one's place. Hartenberger points out that in *Drumming,* "on the [tuned] bongos, the most obvious note combinations to hear when you have reached a canonic relationship are the G# patterns made by your part and the non-moving part....

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[82] Hartenberger.

[83] Hartenberger.

This is also an easy relationship to hear when three and four players are playing at the same time."[84] With UPM, the phasing performer should feel beat one in the same place as the steady player for all of the patterns. Using DPM, each pattern would be practiced so that the phasing player feels beat one as beat one of the basic pattern for all of the patterns. Hartenberger recommends:

> [I]n the first phase in *Drumming,* the point that is reached after the first phase is on beat "six" of the non-moving part. You should practice jumping in against the non-moving part on beat "six" to hear and feel what it sounds like. This helps you know what the sound and feel is like when you have accomplished the phase and interlock in the next relationship. After you are able to recognize the next relationship, you can start in unison with the non-moving part and begin to phase.[85]

Hartenberger is describing two "mental attitudes" for the phase pieces: interlocking mode and phasing mode.[86] He states that a player must move from interlocking mode to phasing mode by choice, making a clear delineation between the two. I think that to have a successful phase, the shift from phasing mode back to interlocking mode must also be by choice. This is much more difficult because the player is attempting to shift from a state of ambiguity (phasing) to one of clarity (interlocking). It is much easier to move from a state of clarity (interlocking) to one of ambiguity (phasing).

In addition to the two mental attitudes that Hartenberger describes, one more exists: flamming. Sounding like grace notes between performers, this occurs at the very beginning and end of the phase, when the phasing player is barely ahead of or behind

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[84] Hartenberger.

[85] Hartenberger.

[86] Hartenberger.

the steady one, respectively. Although flamming could be considered part of the phasing mental attitude described by Hartenberger, it is a significantly different mental state and one that is necessary in order to make the smallest perceptual change in the phasing process. To practice this using the first phase in *Drumming*, the phasing player can try staying just barely ahead for an extended period of time, acting as the grace notes of flams for each of the corresponding notes of the other player. Once this becomes comfortable, the technique can be applied to the beginning and end of all phases.

Hartenberger finds it helpful to think about moving forward before physically moving forward. He says that it is acceptable to "slip back into partial unison while you are beginning the phase. This is the easiest part of the phase and can be drawn out more easily than the other parts of the phase."[87] While I agree with the last part of the statement, I prefer not to slip back into partial unison when phasing; believing that the process should always be moving forward, not backward.

The concept of trying to stay a grace note ahead of the steady player raises the question of whether we should even be thinking this way at all. Does the phasing process move in steps, or is it a steady process? Hartenberger thinks of the process as a combination of both:

> Once you have begun to phase, you do not have to make a steady acceleration. You can feel like you have one foot on the gas pedal and one foot on the brake. There can be a push-pull effect while you are phasing. You can also stay in an irrational relationship for a while if you feel comfortable there.[88]

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[87] Hartenberger.

[88] Hartenberger.

This is the equivalent of driving at the speed limit, accelerating to pass a car, and then returning to the original speed. In *The Blind Watchmaker*, Richard Dawkins discusses the rate of evolution in an analogous fashion, separating theories of evolution into the categories "constant speedism" and "variable speedism."[89] Dawkins believes that "constant speedism," or a constant rate of evolution, is impossible and does not exist, leaving only "variable speedism," or a variable rate of change.[90] The larger structure of the phase pieces are "variable speedist" pieces. Each phase is followed by a moment of stasis, which is then followed by another phase, etc. The question is whether each individual phase is constant or variable. While achieving a constant rate of change in the individual phases of *Piano Phase* and *Drumming* is possible, it is difficult without having some checkpoints.

Although there are an infinite amount of points between the beginning and end of a phase, knowing a few key incremental places within a phase can give the performer much more control of the process. Hartenberger describes some checkpoints in *Drumming* that he finds helpful:

> While phasing on bongos, there are 3 fairly obvious reference points: the 1/4 point; the 1/2 point; and the 3/4 point. The 1/2 point is the most obvious since, theoretically, sticks of both players are not striking the bongos at the same time. The 1/4 point and the 3/4 point feel like semi-arrival points as opposed to the more random feel of the rest of the phase. At any of these points, you can settle for a few seconds before moving on. Phasing away from the 1/2 point feels similar to phasing away from unison and can often be done very gradually. The most difficult part of the phase is from the 3/4 point to the next interlocking pattern. Once your ear hears the next interlocking pattern approaching there is a

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[89] Richard Dawkins. *The Blind Watchmaker* (New York: Norton, 1986) Print.

[90] Dawkins.

> tendency to want to move quickly to that pattern. To resist this urge, you have to feel like you are almost putting the brakes on rather than accelerating.[91]

Achieving these additional interlocking patterns may seem difficult. Learning the checkpoints for *every* phase seems even more daunting. However, the pros certainly outweigh the cons in this situation. The consequence of failing to understand these additional checkpoints is obvious when a performer is on stage nervously lost within the phase, unable to find the next interlocking pattern, or when a performer rushes through phase after phase. Checkpoints could be studied and rehearsed at even smaller intervals, such as thirty-second notes and so on. While this is possible, the practicality of such checkpoints decreases as the note values become smaller.

In *Drumming,* for the purposes of phasing, I am the most comfortable feeling the piece in two because the main motive and its variations are symmetrical. It could be argued, however, that feeling the piece in three gives the performer more anchor points when trying to phase.

It is important to remember that the phasing process should be gradual. The performer should not simply jump from playing in unison, to one sixteenth note ahead, to one eighth note ahead, and so on. The additional checkpoints merely provide the performer with anchor points within the phase. Performing without these checkpoints is a bit like driving from one city to another on a long, empty country road with no odometer, clock, or GPS for reference. If you keep driving you will get to your destination, but it is difficult to tell how long it will take. If, however, there are some landmarks at specific points between the two cities, you will have a much better idea of how far away the destination is. It is also important not to miss your off-ramp. When

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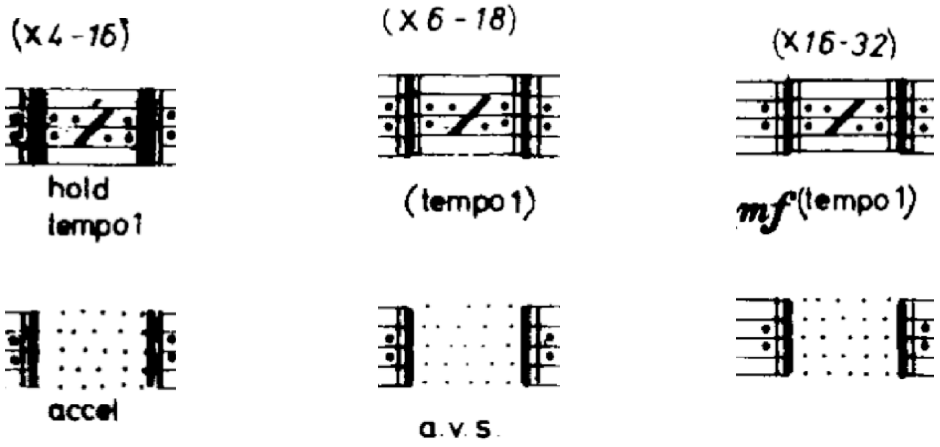
[91] Hartenberger.

finishing a phase and arriving at an interlocking pattern, the person phasing must remember to slow down, since he/she has been playing at a slightly faster tempo than the steady player. If an adjustment is not made they will not lock in together. A good knowledge of the checkpoints within the phase, including the final flamming, will help make this achievable.

Determining the length of the phase is ultimately up to the performer. Hartenberger remembers:

> Steve says that phases should be somewhat short in length in the first section since there are 12 notes in each part, medium length in the middle section since there are 8 notes in each part, and longest in the third section since there are 4 notes in each part. This gives more overall balance to the structure of the piece.[92]

In *Piano Phase,* Reich specifies the following ranges of repetitions.



Left: Phase from the first section of *Piano Phase*[93]

Middle: Phase from the second section of *Piano Phase*[94]

Right: Phase from the third section of *Piano Phase*[95]

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[92] Hartenberger.

[93] Reich, Piano Phase 2.

[94] Reich, Piano Phase 3.

[95] Reich, Piano Phase 3.

In the footnotes for *Drumming*, Reich gives the performers similar guidelines for the length of the phases, this time with ranges such as “20-35 seconds” or “30-45 seconds.”[96] How does a performer decide how long the phases should be? Hartenberger suggests that musicality should be the number one determining factor in the length of the phase. He also cites other factors as the technical ability of the players, acoustics of the hall, the concert situation, and the comfort level of the players to go with the flow of the phase.[97] The last factor is often the most influential, even though it should not be. Although Hartenberger says it is fine for performers to make the phase shorter if they are not secure in making an extended phase, he also states that “once you have done that a few times and feel secure that you know where the phase should end, you can begin to make a more extended phase.”[98] Therefore, he would probably agree that a performer should not ultimately let his/her inexperience and insecurity determine the length of the phase, but should have the goal of an extended phase in the long run.

The lengths of the phases within *Drumming* “tend to be shorter in length” from section to section, says Hartenberger.[99] The first section with the bongos having long phases, the middle section with marimbas having medium-length phases, and the final section with glockenspiels having the shortest phases. Hartenberger claims it is easier to produce a longer phase when the player’s arms have a longer distance to travel, resulting in long phases on the bongos and short phases on the smaller

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[96] Reich, Drumming.

[97] Hartenberger.

[98] Hartenberger.

[99] Hartenberger.

glockenspiels.[100] He describes another reason why the phases in the last section of *Drumming* are short:

> The distance apart of the instruments and the acoustics of the hall make it difficult for all parts to stay together. The person playing the non-moving marimba part has a particularly difficult part because that person has his/her back to the bongos and cannot make visual contact with the bongo player who is on the non-moving part.[101]

In the following statements, Hartenberger states that personal preference also plays a role in the length of the phases and interlocking patterns:

> I keep these instructions in mind when I phase in *Piano Phase*, but I make decisions about the length of time I remain on the interlocking patterns based on my personal enjoyment of the composite relationship. If I feel the interlocking pattern is a particularly good groove, or if I am hearing it in an interesting way, I might stay on it longer. If the interlocking pattern feels less interesting to me, I might move on more quickly. In other words, I don't try to play the interlocking patterns the same length of time for each of the patterns.[102]

> Cornelius (Cardew) made a great comment once about "Drumming." Bob and I were stretching out every phase as long as we possibly could. And he said, "Why don't we make the first one really long to show people that's what we can do, and then just kind of get on with it?"[103]

So far, the majority of the focus has been on the phasing part, with little attention given to the steady player. Remaining steady as another player pulls away from you presents its own challenges that should not be underestimated. An inexperienced player can be easily pulled along as the other player phases, speeding up and slowing down to the detriment of the phase. Rarely would the steady player take the blame for a poor phase, but sometimes this can be at the root of the problem. I immediately found this to

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[100] Hartenberger.

[101] Hartenberger.

[102] Hartenberger.

[103] Tones 26.

be the case when I began rehearsing *Piano Phase*. I prepared for my first ensemble rehearsal by playing with a loop that I created on my computer, eventually reaching a good level of comfort. As soon as I switched to phasing against a person, I felt I had much less control of the phase. That is not to say the steady player was doing a poor job. He was doing a very good job. It is simply the human element of the phasing process. Hartenberger believes the steady player should not think of being completely steady:

> [A]n experienced player of the non-moving part (like Bob Becker who plays that part in Steve Reich's group and in Nexus) will not only keep a solid time sense, but will push ever so slightly. This creates musical tension by making it more challenging for the person doing the phasing to speed up. In the end, however, this makes for a more dramatic phase. The person doing the phasing has some 'time resistance' to push against and can be more assertive in phasing. The phase then becomes more of a dual effort rather than a one-person effort.[104]

Phasing against more than one person, as in the marimba section of *Drumming,* is less flexible than the situation described above. When multiple players are playing the immovable part, they "should lock into each other and remain solid in their time sense."[105] Phasing in this situation is more like playing with a looped recording: it is less likely to move.

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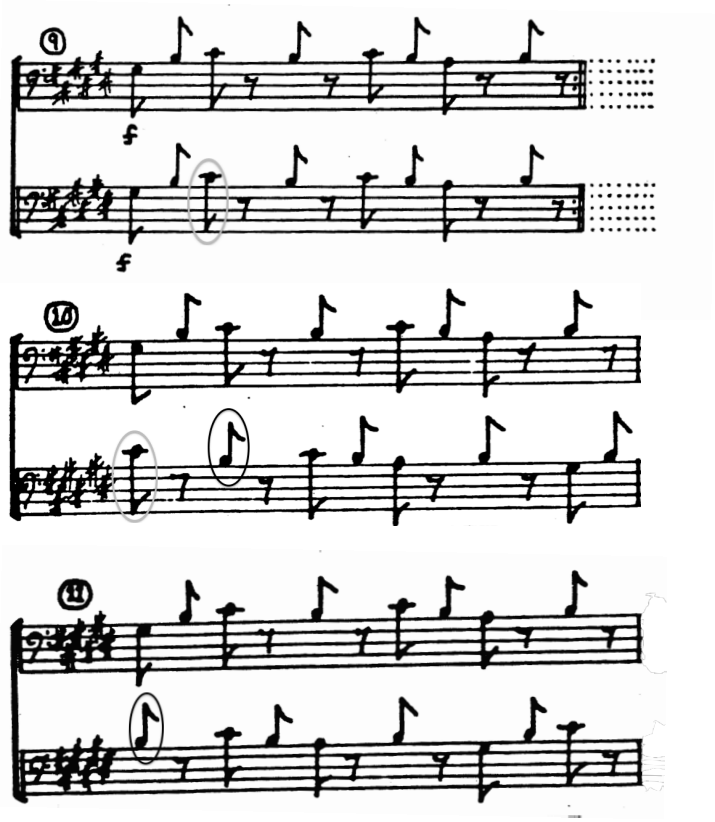
[104] Hartenberger.

[105] Hartenberger.

Unified Pulse Method (UPM): A Unified Sense of "One"

As declared earlier, I desired to unify the sense of beat one for all of the players when rehearsing *Drumming*. I was not comfortable feeling beat one at a different spot than the steady player throughout most of the piece. I quickly learned it is impossible for all of the players to feel beat one at the same time, all of the time. Phasing players must shift their perception of where beat one is each time they phase to realign with the other player. My initial thought was for the phasing player to do this after completing the phase, since that is what the music seems to indicate. What I found, however, was if the phasing player shifted the perception of the beat earlier, before the phase, the chances of completing a successful phase increased dramatically. This mental shifting of the beat is what I call UPM.

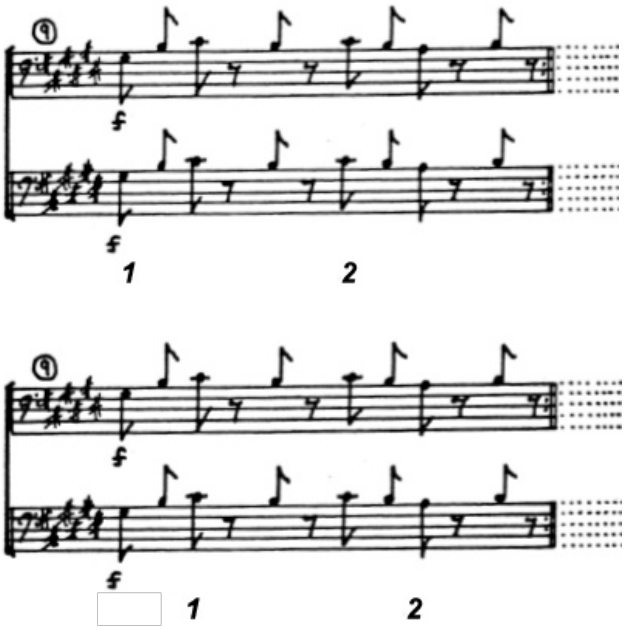
Let us look at the first phase in *Drumming* as an example of how UPM would be implemented. From rehearsal 9 to rehearsal 15*,* all of player 2's patterns are the same, simply shifted two eighth notes after each phase (player 2 is the lower staff). The third eighth note in the player 2 part at rehearsal 9 becomes the first eighth note after phasing to rehearsal 10, as shown below. Likewise, the third eighth note in the player 2 part at rehearsal 10 becomes the first eighth note after phasing to rehearsal 11, and so on.

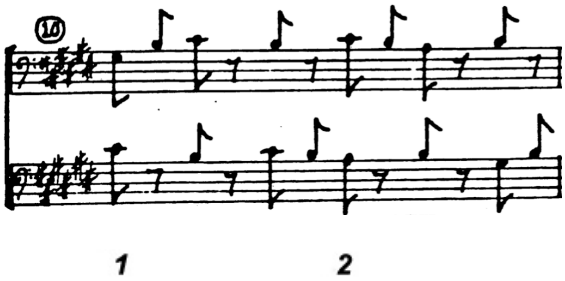


Corresponding C#s circled in gray. Corresponding Bs circled in black.[106]

My goal was for both players to feel beat one in the same place at the completion of the phase; on the first note of the written measures. This is possible if player 2: (1) adjusts the perception of where the beat lies while repeating rehearsal 9 to match the notated music at rehearsal 10, and (2) executes the phase from rehearsal 9 to rehearsal 10 by slowly speeding up. See the following diagram (the numbers indicate the perception of the beats by player 2):

[106] Reich, Drumming.





Top Left: Player 2 (bottom staff) perceives beat one as written in the score at rehearsal 9.[107]

Bottom Left: Player 2 mentally shifts the perception of the beat at rehearsal 9.[108]

Right: Player 2 perceives beat one at rehearsal 10 as written after phasing.[109]

Although nothing has audibly changed in the first step and the two players are still playing in unison, player 2 is already perceiving the part differently. Player 2 feels beat one as it will lie at rehearsal 10 before the phasing even begins. Once the phase is complete, both players already feel beat one in the same location, creating a stable arrival point. My basic steps for phasing with UPM are therefore:

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[107] Drumming.

[108] Drumming.

[109] Drumming.

1) Both players play in unison.

2) Player 2 shifts his/her perception of the beat to match the next measure.

3) Player 2 begins to phase.

4) Player 2 completes the phase, arriving at the next interlocking pattern while feeling the same beat one as player 1.

5) Before making the next phase, player 2 shifts the perception of the beat once again and repeats the previous steps.

It is one thing to change your perception of the beat when playing by yourself, yet it is something very different when you are interlocking with another player. The resulting pattern melodies become so ingrained, that changing your perception of the beat is difficult at times. With UPM, it is necessary for player 2 to feel every interlocking pattern in two different ways: first as it is written on the page, and second with the beat shifted before phasing. Therefore, it is important to be comfortable with both perceptions of the beat before trying to phase. While both versions will sound the same and player 1 will feel them the same way, the phasing player will feel them as two very different patterns. When combined with some visual checkpoints, UPM greatly eliminates guessing and greatly improves security during the phase.

Music as a Visual Process

From the very beginning of *Drumming*, the piece is visually engaging as two performers build the pattern from the ground up. The substitution of beats for rests by the second player is actually seen more than it is heard. I believe that if an observer were to closely watch an overhead video performance of *Drumming* without audio, the phasing process could be visually perceived. As the musicians move from playing in unison through the phasing process, the sticks could be seen moving together, then slowly shifting out of phase in the visual space. Once a phase is completed, an observer could see the sticks moving in time together, yet in a different pattern. The visual phase is brought to the forefront of *Piano Phase* in percussionist David Cossin's version, *Video Phase*, in which he plays the phasing part on midi drum pads behind a translucent screen onto which is projected a video of himself playing the steady part. The result is a somewhat eerie but sensational four-armed Vishnu-like version of the percussionist, allowing the audience to see when the arms are in unison, phasing, or playing interlocking patterns.

Not merely a by-product of the audible phase, the visual motion of the sticks can be utilized as a tool by the performers. It is not far fetched to think of the steady player's sticks as a conductor's baton. The phasing musician can visually place his/her notes either with or between the steady player's strokes. In theory, the phasing could be performed successfully without any sound whatsoever.

Visual Checkpoints

Knowing and watching for which drum the steady player strikes on beat one of the arrival points (the point immediately after the phase) can facilitate the phasing process. Let's take the first phase of *Drumming* for example. Before the phase at rehearsal 9, both percussionists are playing beat one on the G# (on the same bongo drum since they shared instruments). On beat one after the phase at rehearsal 10, player 1 remains on the G# and player 2 plays the C#. Player 2 can use visual cues between these two points by following these steps:

1) Play in unison with player 1 at rehearsal 9.
2) Mentally shift beat one to the C# (the point after the phase).
3) Speed up while watching both sets of hands, focusing on the G# of player 1 and your C#. Watch the C# gradually get closer to player 1's G# on beat one. When you strike the C# at the same time player 1 strikes the G#, the phase is complete.
4) Apply similar checkpoints to all of the phases.

Steve Reich and Musicians and Nexus use gestures to help keep the phases together. Hartenberger states that "you learn little techniques, visual techniques—different things to keep together."[110] He believes "The last section of *Drumming* is the only place where it is helpful to keep track of the phasing visually. It is often difficult to

[110] Tones 24.

hear the other parts, so visual confirmation, or even confirmation nods are helpful."[111] However, I believe these signals can be used throughout the phase pieces.

When used in conjunction with UPM in the phase pieces, gestures can be very helpful in times of complexity, ambiguity, and arrival points. Performers can give a small body motion on beat one of each measure during the phases. When the phasing player shifts the beat, this gesture will now be out of sync with the steady one. Muscle memory and rhythmic stability will keep the parts together at this point. As the performer phases, the gestures will get closer and closer to each other until they match up perfectly and the phase is complete.

One of the most challenging phases in the first section of *Drumming* is the group phase at rehearsal 14 when three players are phasing from different patterns to arrive together at rehearsal 15. My colleagues and I referred to this section as the "wolf phase" due to its extreme rhythmic dissonance, reminiscent of the dissonant "wolf intervals" in meantone temperaments from the Renaissance and Baroque era. In order for all players to arrive in unison at the same time upon completion of the phase, they must phase at different rates since they have different distances to travel. This can take a lot of rehearsal time to perfect. Since it is nearly impossible to hear any checkpoints throughout all of the chaos, it is helpful to watch the sticks of the other musicians. As described earlier, a phasing player can watch as his/her sticks get closer and closer to the pattern of the steady one. In this phase, player 4 is closest to player 1's steady pattern and must be patient, watching his/her sticks slowly get closer to the steady player's hands. Player 2 is the next closest and must watch the sticks of player 4. Lastly,

[111] Hartenberger.

player 3 is the furthest from the steady pattern and must watch the sticks of player 2. If this order is followed, then everyone should arrive at rehearsal 15 at the same time.

The Influence and Effects of the Phase Process

The phase pieces of Reich have been humbly described by the composer as “a footnote to the history of the canon.”[112] More than merely a footnote, their effect on Western classical music and other musics (or as Reich prefers to say, “notated and non-notated musics”) will be lasting.

The direct influence of the phase process can be seen in the following “notated” works: William Duckworth's *Time Curve Preludes*; John Luther Adams' *Dream in White on White*; Kyle Gann's *Time Does Not Exist*; Petri Kuljuntausta's *Violin Tone Orchestra*, *Words, When I Am Laid In Earth,* and *Eight Rooms*; J.F. Rogers’ *Once Removed;*[113] and Brian Eno's “non-notated” *The True Wheel.* Although none of the pieces copy the process in its pure form, the influence is evident. *Eight Rooms* is based on spatial phasing, where phase shifted sounds move around the listener.[114] *Once Removed* consists of two nearly identical marimba parts offset from each other so that one performer plays in the space of the other’s notes, resembling the halfway point of any of Reich’s phases. Bang on a Can co-founder and composer David Lang’s piece *Cheating,*

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[112] *Phase to Face* 20:10.

[113] Petri Kuljuntausta, "Phasing," Web. 20 Feb. 2011 <http://sites.google.com/site/petrikuljuntausta/>

[114] Kuljuntausta.

Lying, and Stealing (1993) shifts elements of a cadence by an eighth note, changing it slightly each time. Reich himself claims the piece would never have been possible without what he had done, but also adds, “I wish I had thought of that.”[115] Lang’s own words seem to echo Reich’s ideas:

> More and more I'm interested in finding one aspect of classical music, one little thing that might be overlooked in every other piece of music, and imagining that is the whole world.[116]... What if there is a combination of a polyrhythm that's an interesting weird rhythm, and what if that interesting weird rhythm was just the whole world, and that lasts for hours.[117]

Lang says that it is Reich’s “repeated examination of music’s basic materials [that] has had a big effect on the composers who have followed him, and certainly the sound, the concentration, the stripping away of ornament, the monumental dedication of large sections of pieces to the working out of his ideas.”[118]

In addition to influencing composers, the phase pieces have the potential to influence performance on a broad scale. The timing skills that are gained from working on the phase pieces have a variety of practical applications and benefits in other music. Most of these applications boil down to the concept of independence. Percussionists often use the term “independence” to describe a musical setting that requires two separate ideas to be performed at once. At a basic level, independence is tapping a foot while playing a passage. At a more complex level, it could be playing intricate polyrhythms with all four limbs on a drum set. These examples of physical

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[115] *Music for Airports* 31:22.

[116] *Music for Airports* 32:50.

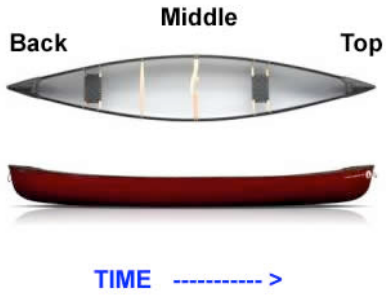
[117] *Music for Airports* 32:50.

[118] David Lang, "Remarks by David Lang" (davidlang.com 2005) Web, 20 Feb. 2012.

independence are the foundation for a strong rhythmic understanding by requiring the performer to play one rhythmic idea against a metric reference point, such as the tapping foot. It is one thing to be able to play eighth notes. It is another thing to play eighth notes in one hand and triplets in the other. The ability to play both rhythms at the same time greatly improves the ability to accurately play one rhythm at a time. It is no coincidence that percussionists generally have an above-average understanding of rhythm. A proficiency in rhythmic independence improves precision and is required of percussionists more often than other musicians.

Musicians must obtain a strong understanding of rhythmic independence in order to play out of time while phasing, which can then be applied to non-phase pieces. Although the concept of playing out of time in order to play in time sounds like a paradox, drum set players must deal with this concept in different ways depending on the style of music they are playing in order to create the right “pocket.” This is based on the idea that the beat is wider than one might typically imagine. Bart Elliott uses the flam as an example of how there is more than one place for the beat to land. The grace note of a flam is still felt as occurring “within the given beat/pulse,” even though it is played slightly ahead of the main note.[119] Different styles of music call for a player to play on the back side of the beat, in the middle, or on top of the beat. Elliott uses a canoe analogy for this concept, where the canoe represents one pulse in the music.

[119] Bart Elliott, “Playing on Top, In the Middle, and Back of the Beat (Drummer Cafe) Web, 20 Feb. 2012.



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The musicians can place themselves at any position within the canoe, but in order to keep the boat from capsizing, the “weight” of all of the parts should be distributed evenly. The vocals may be in the front of the boat, the bass may be in the middle, and the snare drum may be in the back. Placing too many musicians in the front of the boat (i.e., on top of the beat) will cause the boat to capsize, as will placing too many in the back (i.e., on the back side of the beat). Elliott realizes that this concept is controversial and that some people claim it is an over-analytical approach. However, not all people have developed a natural feel of where to place themselves within the beat, just as not all performers have a natural ability to phase. Practicing phasing can be a way to find the right place within the canoe. For example, if a musician develops the ability play slightly ahead of another player while phasing, then playing on top of the beat in fast-paced Cuban music should be easier. And if a player rehearses staying slightly behind the beat while another player remains steady, then the ability to play a snare drum note on the backside of the beat in a pop tune should improve. Perfecting the phase can develop one’s sense of the “pocket” due to its requirement of playing on

[120] Elliott.

the back side or on top of the beat. This goes for any musician in an ensemble, not only percussionists.

An elevated ensemble cohesiveness is achieved when all members of the ensemble are comfortable with everyone's rhythmic position in the music. A good accompanist, for example, will know when to remain consistent when the soloist chooses to be freer with rhythm. One can think of the rhythmically consistent part in Reich's phase pieces as the accompanist, where the player performing the phase is the soloist. There are times when the players must be together, and there are times when the consistent part must let the player performing the phase pull away.

In situations where sound delay creates problems, the music may never sound together to the performer. Timing issues can arise when dealing with the relatively slow speed of sound (1,126 ft/sec under normal conditions), creating the need to be even more on top of the beat than is required for any normal "in the pocket" feel. For example, as sound moves toward the audience from an orchestra, a sound created from the front of the ensemble will reach the audience before a sound created from the back of the orchestra if both sounds are created at the same time. This would not be a problem if the musicians listened back toward the percussion section for time. If the first violins play with what they hear behind them, the sound will reach the audience at the same time. Problems can arise when music starts from the front of the ensemble, followed by an entrance at the back of the ensemble. The triangle player at the back of the room must be on top of the beat when entering if the concertmaster in the front of the room has already started playing, otherwise the triangle attack will sound late. In the case of the orchestra, these problems are relatively minor due to the close proximity of

the musicians. When the ensemble is spatially expanded outward, as is the case with a marching band, greater problems arise. For example, the front ensemble percussion section and drumline of a marching band may separated by 160 feet on a football field. If the front ensemble is already playing, and the drumline plays an attack with what they hear in front of them, the drumline attack will sound late to the audience (but great to anyone on the back sideline of the field). By the time the drumline attack reaches the audience, they have already heard the corresponding beat from the front ensemble. At a tempo of 105 beats per minute (bpm), the drumline members would need to enter roughly one sixteenth note ahead of what they hear in order to line up their attack; at 140 bpm it would be roughly one note of an eighth note triplet; and at 211 bpm it would be roughly an eighth note. It can be very difficult for performers of any level to practically ignore what they are hearing and enter as early as I have just described. Having experience with the phase pieces of Reich can lessen the problems associated with sound delay.

Differences Between Tape and Human Performance

When striving to make the phases as successful as possible, I found myself wondering if the process should be mathematically perfect. Should the human phasing pieces be thought of as tape pieces for people? My initial thought was yes. After researching, information has changed my outlook on the phasing process. Hartenberger explains, "Steve's interpretation of the parts in *Drumming* and other early works, imbued

the parts with a real sense of style and character that might not have occurred had he demonstrated the parts with more mathematical precision."[121] That sense of style is from the influence of jazz on Reich and the effect that his own left-handedness had on his playing of the patterns. Is this what Reich wanted? It sounds like it is. Reich wrote, “the imperfections seemed to me to be interesting and I sensed they might be interesting to listen to.”[122] The greater question is not whether the phasing pieces should be mathematically perfect, it is whether music performed by humans should be perfect at all. Lang feels imperfection is at the core of human musical performance when he says, "Everything about human performance is about imperfection . . . so it's not just the color changing from instrument to instrument which gives it humanity but it's also the change in bow speed, hearing the breath.”[123]

What is it about imperfection and human performance, however, that makes it more interesting than the mathematical perfection of the tape loops? For Brian Eno, it comes down to emotion. He describes what he felt when hearing the Kronos Quartet perform his *Music for Airports* for the first time*,* a piece originally written for tape loops, by saying, “Somehow it's more emotional because it's played by people rather than by tape loops and you automatically impute a lot of emotional material that actually I didn't put there.”[124]

In the human phase pieces, the humanity in the music comes from multiple performance aspects: the slight variations in rhythm, the sliding back and forth in the

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[121] Hartenberger.

[122] Reich, *Writings* 54.

[123] *Music for Airports* 39:05.

[124] *Music for Airports* 38:15.

phase, the chosen resulting patterns, the chosen number of repeats, the length of the phase, the venue, the chosen instruments, and perhaps even the possibility of getting lost. The music is a living thing when performed by musicians and this difference is perceived by the audience. The existence of these differences from performance to performance is one reason that Hartenberger still enjoys the phase pieces after forty years:

> You will find that every phase you play is different. You cannot always control the overall shape of each phase. If you are secure in your part and know where you are in relation to the non-moving part at all times, then you can enjoy this part of phasing. The phase takes you out of yourself and has a life and feel of its own. I can never predict how a phase will be shaped, how long a phase will be, or how irrational it might sound. I have learned to enjoy this aspect of phasing, and am continually surprised and elated by the directions the phases take.[125]

The inherent imperfections in the human phasing process are not reason to devalue the attempt at perfecting it and should not be used as an excuse to ignore the methods described thus far to improve it. The imperfections in this case are nuances that embed a human quality into the music; they do not destroy the phasing process.

A learned ability to play this music as it has been presented will have far-reaching effects in many musical situations, and further exploring the applications of UPM could be enlightening. As more musicians begin using UPM, a clearer picture of its value will form. It is my hope that rehearsing the phase pieces of Reich using UPM can be a pathway toward better musicianship.

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[125] Hartenberger.

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