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Existing analyses of *Sequenza VII*'s form rely on the aggregate-completing pitch of a fixed-register pitch series to outline the climactic area of the piece and to help define the traditional formal archetype of build-up - climax - resolution. The occurrence of the climax at approximately the golden mean divides the piece into two main sections that are temporally proportionally balanced.¹

This singular formal conception, based on a traditional archetype, while satisfying and useful in some respects, does not reveal everything about the piece's form: most importantly, it is not able to address significant formal aspects that situate *Sequenza VII* more clearly in a postmodern context. The overriding aspect to which I refer is temporality, or rather, the multivalence of temporal organizations present in this piece, a concept that is characteristic of postmodern musical works.² Berio himself has pointed to this idea; he has said, "...I will never be able to conceive...to attempt a time conception in a 'univocal' way. There are always different phases that are important."³

In this document, I show that *Sequenza VII* exhibits multiple simultaneous temporal organizations that may individually be linear, partially linear, or spatial. These simultaneous temporal organizations allow for the presence of different temporal "phases," to use Berio's term: at certain moments a particular temporal organization may rise to the surface or become more prominent, depending on a performer's interpretation and/or a listener's perspective. The possibility that temporal structure can reside within the listener is a trait of many postmodern

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2 See Jonathan Kramer, "Postmodern Concepts of Musical Time," *Indiana Theory Review* 17 (Fall 1996): 21-61.

3 Luciano Berio in an interview with Bernard Weisser. In Bernard Weisser, "Notational Practice in Contemporary Music: A Critique of Three Compositional Models (Luciano Berio, John Cage, and Brian Ferneyhough)" (PhD diss., The City University of New York, 1998), 248.

musical works, and comes into play here especially with respect to a spatial interpretation of form.⁴ Further, the different temporal organizations are unified by particular salient pitches whose multiple functions permit relationships to form between the temporal layers. This multivalent interpretation of temporality and form not only justifies Berio's claim that for him it is impossible to conceive of time in a univocal way, but also reinforces *Sequenza VII*'s important place in the postmodern musical repertoire.

My original analysis draws on Judith Lochhead's phenomenological approach to temporal structures, Jonathan Kramer's study of conceptions of time in music, and Joshua Mailman's work on "temporal dynamic form." My analysis is further supported by a comparison of timings gathered from recordings of the piece and graphic representations of particular temporal and formal ideas.

4 See Kramer, "Postmodern Concepts of Musical Time," 22-23.

LUCIANO BERIO'S *SEQUENZA VII*: TEMPORAL MULTIPLICITY
AND ALTERNATIVE CONCEPTIONS OF FORM

by

Nicole E. Strum

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Committee Chair

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APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

Committee Chair _____

Committee Members _____

Date of Acceptance by Committee

Date of Final Oral Examination

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CHAPTER I
INTRODUCTION

Luciano Berio's *Sequenza VII* (1969) belongs to the set of solo pieces composed between 1958 and 2002. Several of these Sequenzas were composed specifically with and for a particular musician.⁵ Berio composed *Sequenza VII* for Heinz Holliger, the famed Swiss oboist, in 1969, and adapted it for soprano saxophone in 1993, at the request of Claude Delangle, who contributed the necessary technical adjustments. While the Sequenzas vary in formal structure (and in many other ways) they have some elements in common. Each piece progresses harmonically and melodically by means of a series of shifting groups of pitches, or harmonic fields, from which other compositional premises and functions are derived.⁶ One of the most important of these is "virtual polyphony," a term used by Berio to express the illusion of the presence of more than one voice in a monophonic work.⁷ Further, some of the Sequenzas exhibit vestiges of twelve-tone compositional practice, as has been discussed, for example, by Irna Priore with respect to *Sequenza I* for flute.⁸ In *Sequenza VII*, a remnant of twelve-tone practice exists in the systematic introduction of pitches that gradually accumulate to form the chromatic aggregate. Music analysts have regarded this series as structurally significant; it has served as the foundation for analyses of the form of this piece. Existing analyses of *Sequenza VII*'s form rely on the aggregate-completing pitch of the series to outline the climactic area of the piece and to help define the

⁵ For more detail about each of the sequenzas and their relationship as a set, see Luciano Berio, trans. David Osmond-Smith, liner notes to *Berio Sequenzas*, Ensemble Intercontemporain. CD. (Deutsche Grammophon, B0015RZORQ, 1998) and Philippe Albèra, "Introduction aux neuf Sequenzas," *Contrechamps* 1 (September 1983): 90-122.

⁶ Luciano Berio, trans. David Osmond-Smith, liner notes to *Berio Sequenzas*, Ensemble Intercontemporain. CD. (Deutsche Grammophon, B0015RZORQ, 1998).

⁷ Ibid.

⁸ See Irna Priore, "Vestiges of Twelve-tone Practice as Compositional Process in Berio's *Sequenza I* for Solo Flute," in *Berio's Sequenzas: Essays on performance, composition, and analysis*, ed. Janet K. Halfyard, (Burlington, VT: Ashgate, 2007), 191-208.

traditional formal archetype of build-up - climax - resolution. The occurrence of the climax at approximately the golden mean, roughly two-thirds of the way through the work, divides the piece into two main sections that are temporally proportionally balanced.⁹

This singular formal conception, based on a traditional archetype, while satisfying and useful in some respects, does not reveal everything about the piece's form: it is not able to address significant formal aspects that situate *Sequenza VII* more clearly in a postmodern context. The overriding aspect to which I refer is temporality, or rather, the multivalence of temporal organizations present in this piece, a concept that is, as explained by Jonathan Kramer, characteristic of postmodern musical works.¹⁰ Berio himself has pointed to this idea; he has said, "...I will never be able to conceive...to attempt a time conception in a 'univocal' way. There are always different phases that are important."¹¹

In this document, I show that *Sequenza VII* exhibits multiple simultaneous temporal organizations that may individually be linear, partially linear, or spatial. These simultaneous temporal organizations allow for the presence of different temporal "phases," to use Berio's term: at certain moments a particular temporal organization may rise to the surface or become more prominent, depending on a performer's interpretation and/or a listener's perspective. The possibility that temporal structure can reside in the listener is a further trait of many postmodern musical works, and comes into play here especially with respect to a spatial interpretation of form.¹² Further, the different temporal organizations are unified by particular salient pitches whose multiple functions permit relationships to form between the temporal layers. This multivalent interpretation of temporality and form not only justifies Berio's claim that for him it is

9 This application of the golden mean in an analysis of *Sequenza VII* is original to me; Leclair, Alessandrini, Stoianova, Osmond-Smith and others have long pointed this out.

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11 Luciano Berio in an interview with Bernard Weisser. In Bernard Weisser, "Notational Practice in Contemporary Music: A Critique of Three Compositional Models (Luciano Berio, John Cage, and Brian Ferneyhough)" (PhD diss., The City University of New York, 1998), 248.

12 See Kramer, "Postmodern Concepts of Musical Time," 22-23.

impossible to conceive of time in a univocal way, but also reinforces *Sequenza VII's* important place in the postmodern musical repertoire.

My original analysis draws on Judith Lochhead's phenomenological approach to temporal structures, Jonathan Kramer's study of conceptions of time in music, and Joshua Mailman's work on "temporal dynamic form." My analysis is further supported by a comparison of timings gathered from recordings of the piece and graphic representations of particular temporal and formal ideas.

Drawing on the work of others and incorporating my own analysis, I identify five linear and non-linear modes of temporal organization within *Sequenza VII*. These modes of temporal organization are distinct but interrelated. I will briefly introduce each one:

1. As described above, previous existing analyses are based on the typical linear archetype of build-up - climax - resolution.
2. The score is constructed through a grid structure of thirteen lines, each of which is divided into thirteen subsections. Each subsection has an indicated duration in seconds which is the same for each line. This grid and its timed durations supply an absolute linear conception of time, a framework against which to measure the actual time in performance.
3. The gradual formation of global, sweeping gestures, such as through the process of introduction of new pitches, and the process of increasing rhythmic complexity, as measured by Patricia Alessandrini, suggest a global linear temporal conception. Further, by measuring the global rate of "pitch freshness," determined by pitch repetition and the quality of newness of a pitch, I give a possibility for *Sequenza VII's* "temporal dynamic form," a kind of form that arises through the

measuring of the flux of intensity of a particular property.¹³

4. The presence of a continuous, incessant drone on the pitch B4 (B above middle C) creates a sense of timelessness, as it defeats directionality. The pitch B4 also serves an organizational role in pitch space, the vertical continuum of pitches from lowest to highest, allowing for symmetrical pitch structures to form. This leads to the possibility of a spatial temporal organization, or, put another way, the grasping of the whole piece in an instant.

5. The piece's temporal directedness, or linear path through time, according to the entrances of pitches, follows two temporal branches that overlap. The series of introduced pitches again comes into play in this interpretation; however, I will refer to it as the "primary series," as I identify a "secondary series" as well. Each series corresponds to a temporal branch.

An interesting feature of these multiple temporal conceptions is their interrelationship: they all hinge upon one or more pitches in common. These pitches include G6, which is the aggregate-completing pitch of the piece's primary series as well as the highest pitch used; D#5, a pitch occurring directly in the middle of the score's grid structure and which forms a symmetrical temporal relationship with G6; and B4, the work's drone and centering pitch.

Due to the interrelated use of these pitches, the interpretation of the fifth mode of temporal organization listed above can be taken a step further: the relationship of the primary series to the secondary series, or the first branch to the second branch, via the positions of D#5 and G6, signifies a kind of metaphorical temporal reversal. This temporal reversal is further supported by parallel durations that exist between the actual beginning and ending boundaries of

¹³ These terms are from Joshua Mailman. See Joshua Mailman, "Temporal Dynamic Form in Music: Tonal, Atonal, and Other" (PhD diss., University of Rochester, 2010).

the piece and the D#5 and G6 entrance positions. This idea of temporal reversal or folding back is reminiscent, to some degree, of Nietzsche's circular model of time, and reflects the notion of the symmetry of time, a concept espoused by philosopher Henri Bergson. It is also related to Lochhead's analysis of Roger Sessions's Third Piano Sonata, where a retrograde transformation of earlier material occurs near the end of the piece, influencing an interpretation of the piece's form. Further, Edmund Husserl's phenomenological views on musical memory retention and recollection come into play through the relationship that is formed between later pitch-classes of the second branch and previously-heard pitch-classes of the first branch.

Before delving into the analysis proper, I will first provide a preliminary discussion in order to define the terms "temporal organization" and "form" in the context of this paper, explain elements of temporal multiplicity in Berio's works in general, and review previous analyses of the form of *Sequenza VII*.

CHAPTER II
PRELIMINARIES

Defining "Temporal Organization" and "Form"

I will refer to the related concepts of "temporal organization" and "form" throughout this paper, and while at times these two terms may seem interchangeable, they really are not. In many ways, form depends upon a particular temporal organization. Temporal organization has to do with the way that pitch, rhythmic, and timbric elements work together in actual or perceived time. Defined broadly, temporal organization can be separated into the two categories discussed by Pierre Boulez: "*temps lisse*," or amorphous time, and "*temps strié*," or pulsed time.¹⁴ *Sequenza VII* falls mostly into the *temps lisse* category, as regular meter and rhythmic periodicity are mostly ambiguous or absent. As discussed by Jonathan Kramer, musical structures can be organized temporally by linear and non-linear means. In Western music studies, linear interpretations have tended to dominate, as one's approach to listening often coincides with or is influenced by the notion of the passing of time. However, Kramer has explained many types of non-linear, partially linear, and spatial types of temporal organizations, as well as the possibility of multiple simultaneous temporal perspectives, which is reflective of a postmodern aesthetic:

...we should expect postmodern musical time to be created at least as much by listeners as by composers, to differ from one listener to another, and to be fragmented, discontinuous, nonlinear, and multiple. The notion of the multiplicity of musical time—that music can enable listeners to experience different senses of directionality, different temporal narratives, and/or different rates of motion, all *simultaneously*—is indeed postmodern.¹⁵

¹⁴ See Pierre Boulez, *Boulez on Music Today*, trans. Susan Bradshaw and Richard Rodney Bennett, (Cambridge, MA: Harvard University Press, 1971).

¹⁵ Kramer, "Postmodern Concepts of Musical Time," 22.

Issues such as the psychological perception of duration and the retroactive interpretation of structural relationships also come into play, as do the time philosophies of significant philosophers, theorists, and phenomenologists.

Form is a flexible term, highly influenced by or dependent upon temporal organization. It is used to describe structures that go beyond typical or traditional archetypes; in twentieth century and contemporary music it has begun to hold many new meanings. These meanings include the notion that form can be process-based, multi-directional, multi-dimensional, or spatial. It can depend on subjective perception, especially with respect to the perception of the passing of time. Judith Lochhead has defined form as follows: "Form is an accumulative process defined by temporally-directed relations that do not evaporate as they become past but continue to mold and be molded by events of the piece's past, now, and future."¹⁶ This idea is related in some ways to Joshua Mailman's discussion of "temporal dynamic form," whereby form arises through the measuring of the rate of flux of a particular property, or properties, in a piece of music over time.¹⁷ The double-branched definition of form (which falls into Kramer's "multiply-directed" category) that I will discuss with respect to *Sequenza VII* is one that goes beyond a typical articulation of a piece into sections according to obvious caesuras, fermatas, or breaths and is one that is dependent on temporal-directedness and association—specifically, the association of initially-heard pitches of the primary series and the pitch class repetitions of the secondary series. One of the aims of this paper is to broaden the understanding of form of *Sequenza VII* beyond traditional archetypes, and to show that the temporal organizations that give rise to interpretations of form are not always or not only linear.

¹⁶ Judith Lochhead, "Temporal Processes of Form: Sessions's Third Piano Sonata," *Contemporary Music Review: Time in Contemporary Musical Thought* 7, no. 2 (1993): 178.

¹⁷ See Joshua B. Mailman, "Temporal Dynamic Form in Music: Atonal, Tonal, and Other" (PhD diss., University of Rochester, Eastman School of Music, 2010).

Temporal Multiplicity in Berio's Works

I am perhaps not alone in suggesting the possibility of new interpretations of form with respect to *Sequenza VII*. In the context of Kramer's claim that postmodern musical time can be created by listeners as well as composers, the following quotation by Berio, in which he explains that it is possible to hear *Sequenza VII* from both a linear and a spatial perspective, has a place:

Sequenza VII ought to suggest two ways of listening. The first is an objective way of listening which follows the sound events in the order of their appearance. The other way of listening is an analytical, timbric way of listening, a harmonic and a polyphonic way of listening at the same time which grasps the successive relations spaced out in time, the hidden polyphony, the spatial perspective centered around the note B.¹⁸

These two modes of listening each play a role in interpretations of *Sequenza VII*'s form.

In her discussion and analysis of *Sequenza VII*, Ivanka Stoianova also refers to multiple formal perspectives. She alludes to the operation of two formal principles, principles that are unified by the presence of the B4 drone:

Sequenza VII for solo oboe (1969), dedicated to Heinz Holliger, presents and resolves, in a particularly original way, a precise compositional problem: the problem of the superimposition and interaction of two fundamental formal principles in musical research of the last twenty years. This problem involves, on one hand, the principle of directional or teleological musical narrative that keeps, though blurs, its relationship with established formal schemas, and, on the other hand, the principle of infinite proliferation that generates open and static harmonic narratives.¹⁹

Additionally, Stoianova makes reference to two more organizational possibilities. First, she comments on the fact that the moment of fulfillment of the chromatic aggregate of the primary series does not coincide with the end of the piece, and suggests that the narrative begins to

18 Translated by Janet Hander-Powers in Gale Schaub, "Transformational Process, Harmonic Fields, and Pitch Hierarchy in Luciano Berio's *Sequenza I* through *Sequenza X*" (PhD diss., University of Southern California, 1989), 154. Berio is originally quoted in Ivanka Stoianova, "Luciano Berio: Chemins en Musique," *La Revue Musicale*, nos. 375-377 (1985): 438.

19 Ivanka Stoianova, "Luciano Berio: Chemins en Musique," *La Revue Musicale*, nos. 375-377 (1985): 433. Translation mine.

develop in the opposite direction following this moment. This idea supports my double-branched interpretation involving the notion of temporal reversal.²⁰ Finally, she suggests that the "macrostructure" of the piece, or its complete formal structure, is in a sense created by a single coherent formal gesture, which allows for the piece to be grasped as a whole.²¹ Stoianova, therefore, agrees with Berio's interpretation that there are in fact different temporal paths to guide one's listening. Her ideas reinforce my view of the presence of simultaneous multiple temporal organizations in *Sequenza VII*.

This premise of simultaneous multiple temporalities plays a role not only in *Sequenza VII* but in other works of Berio. Some obvious examples in Berio's oeuvre involve the James Joyce-inspired narrative layering in the last movement of *Sinfonia* (1968) and in *Thema (Omaggio a Joyce)* (1958), as well as the latent polyphony found in many of the *Sequenzas*. The final movement of *Sinfonia*, composed just prior to *Sequenza VII*, is comprised of intertextual layers of musical narrative, much like the layering of multiple narratives in the literary works of Joyce, a writer whose works held special significance for Berio. Superimposed temporal streams hold together Joyce's *Ulysses* and *Finnegan's Wake* in such a dense manner as to almost obliterate meaning.²² *Sinfonia* exhibits similar characteristics. Its multiple simultaneously-layered temporal streams loosely reflect what Kramer calls "multiply-directed" time.

Thema (Omaggio a Joyce) is a further example inspired by Joyce's layered literary constructions. Berio describes Joyce's approach in the "Sirens" chapter, chapter eleven, of *Ulysses*, which was the inspiration for *Thema (Omaggio a Joyce)*, by referring to a "polyphonic thread woven into the narrative fabric" and a "single, polyphonic dimension."²³ When one hears

20 Ibid, 436. Stoianova explains: "Après la zone culminante élaborant le dernier son de la succession de 12, l'énoncé se développe dans le sens inverse, celui de rétrécissement et de raréfaction terminale de l'espace sonore."

21 Ibid, 434-444. Stoianova explains: "L'élaboration de la macrostructure ou de la structure formelle de la pièce dans son ensemble est soumise à un geste formel cohérent et confirme, de ce fait, le statut de l'oeuvre en tant que totalité."

22 David Osmond-Smith, *Playing on Words: a Guide to Luciano Berio's Sinfonia*, (London: Royal Music Association, 1985): 4-5.

23 Luciano Berio, "A Tribute to Joyce," *Classic Joyce: papers from the XVI International James Joyce*

the work, one's attention jumps back and forth between layers, defining what Kramer would describe as "counterpoint between several temporal paths."²⁴ This description of polyphony in Joyce's *Ulysses* reflects Berio's preoccupation with a "virtual" or implied polyphony in his own works. This "virtual" polyphony can be described as a kind of illusory contrapuntal technique defined by fragmented voices layered one on top of the other. In the *Sequenzas* it is further defined by disjunct motion and extreme shifts of character. Evidence of this technique is found in Berio's multi-instrument works as well as in his monophonic works. Berio explains further:

...almost all the *Sequenzas* have in common the intention of defining and developing through melody an essentially harmonic discourse and, above all when dealing with the monodic instruments (flute, oboe, clarinet, bassoon, trumpet, trombone), of suggesting a polyphonic type of listening, based in part on the rapid transition between different characteristics, and their simultaneous iteration. Here polyphony should be understood in a metaphorical sense, as the exposition and superposition of differing modes of action and instrumental characteristics.²⁵

The premise of implied polyphony is discussed from another perspective by Irna Priore in the context of *Sequenza I* (1958). She demonstrates the presence of vestiges of twelve-tone practice found within this *Sequenza*, and in one example shows the multidimensional layering of a particular row-form.²⁶ It is precisely this multidimensional quality of virtual or implied polyphony that relates it to the premise of multiple simultaneous temporalities; virtual polyphony in general could be interpreted as two or more temporal dimensions overlapping, phasing in and out.

Symposium, Rome, 14-20 June 1998, 91.

²⁴ Kramer, "Postmodern Concepts of Musical Time," 60.

²⁵ Luciano Berio, trans. David Osmond-Smith, liner notes to *Berio Sequenzas*, Ensemble Intercontemporain. CD. (Deutsche Grammophon, B0015RZORQ, 1998).

²⁶ Priore, "Vestiges of Twelve-tone Practice as Compositional Process in Berio's *Sequenza I* for Solo Flute," 203.

Previous Analyses of *Sequenza VII*

I will now give a brief overview of existing conceptions of form of *Sequenza VII*. I will first introduce the primary fixed-register pitch series, the series that plays an important role in the interpretation of the location of the climax. I will then explain and demonstrate graphically three related formal interpretations that are based on similar criteria for division of sections: sections are defined by caesuras, rests, fermatas, type of narrative, and pitch material. Further, the significance of the golden mean proportion plays a role in these interpretations. This significant and well-known proportion will return later in this paper in the context of alternative conceptions of form.

As has been demonstrated in previous analyses of *Sequenza VII*, a thirteen-pitch series of fixed-register pitches is gradually introduced into the harmonic texture.²⁷ This fixed-register pitch series, what I am calling the "primary series," is shown in Figure 1:

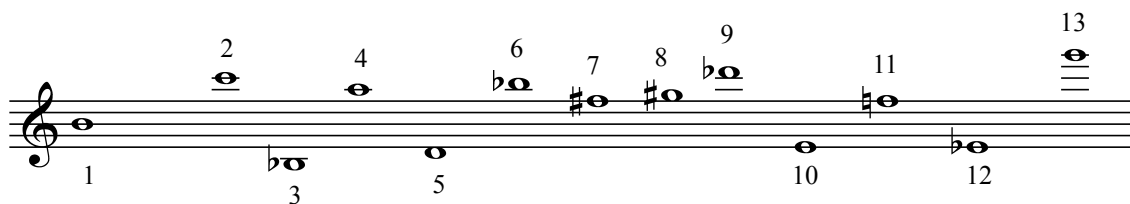


Figure 1. Fixed-register pitches forming a thirteen-pitch series (the primary series).

The term "fixed-register" refers to the fact that each pitch of the primary series occurs in only one register, with only one exception.²⁸ The pitches of the primary series are introduced over the first nine lines of the score. Just before the entrance of the primary series's final pitch, the G6, pitch-classes begin to appear in other octaves, beginning a "secondary series." For the moment, I will

²⁷ See analyses by Jacqueline Leclair, Paul Roberts, and David Osmond-Smith among others.

²⁸ Bb5 has a particular function which will be explained in the context of a spatial conception of form with respect to Figure 7.

focus on the primary series. While *Sequenza VII* was not composed by means of strict twelve-tone or serial techniques, vestiges of twelve-tone compositional processes can be identified in many of Berio's works after 1968, despite his public renunciation of serialism that year.²⁹

In Figure 2 I compare existing formal interpretations which are based on the traditional archetype of build-up - climax - resolution, itself dependent on a linear temporal organization. I have included the formal interpretations of oboists Jacqueline Leclair and Christopher Redgate, theorists Gale Schaub and Ivanka Stoianova, and Paul Roberts, who was one of Berio's assistants and engravers.³⁰ The general understanding here is that the piece is through-composed.

Leclair	beginning - line 8, m. 1		line 8, m. 1 - line 10, m. 4	line 10, m. 4 - end	
Roberts, Stoianova, Redgate	beginning - line 10, m. 6			line 10, m. 6 - end	
Schaub	beginning - line 2, m. 6	line 2, m. 6 - line 4, m. 2	line 4, m. 2 - line 8, m. 1	line 8, m. 1 - line 10, m. 4	line 10, m. 4 - end

Figure 2. Comparison chart of three traditional formal interpretations of *Sequenza VII*.

According to Paul Roberts, *Sequenza VII* falls into two main sections, whose division is related to the entrance of fixed-register pitches. He claims that "all commentators agree" upon this division; the chart in Figure 1 more or less supports his claim: this division occurs somewhere

²⁹ Berio expressed his views on serialism in the infamous 1968 article "The Composer on His Work: Meditations on a Twelve-tone Horse" in *Christian Science Monitor*, 15 July, 1968. Further investigation into this area has been discussed by Irna Priore and Christoph Neidhöfer. See Christoph Neidhöfer, "Inside Luciano Berio's Serialism," *Music Analysis* 28 (July-Oct. 2009): 301-348 and Irna Priore, "Vestiges of Twelve-tone Practice as Compositional Process in Berio's *Sequenza I* for Solo Flute," in *Berio's Sequenzas: Essays on Performance, Composition, and Analysis*, ed. Janet K. Halfyard (Birmingham, VT: Ashgate, 2007), 191-208.

³⁰ See Jacqueline Leclair, "Luciano Berio, *Sequenza VIIa* (1969/2000) Analysis," *The Double Reed* 33, no. 2 (2010): 98; Christopher Redgate, "Performing *Sequenza VII*," *Contemporary Music Review* 26 (April 2007): 227; Gale Schaub, "Transformational Process, Harmonic Fields, and Pitch Hierarchy in Luciano Berio's *Sequenza I* through *Sequenza X*" (PhD diss., University of Southern California, 1989), 146; Ivanka Stoianova, "Luciano Berio: Chemins en Musique," *La Revue Musicale*, nos. 375-377 (1985): 433-439; and Paul Roberts, "On Luciano Berio's *Sequenza VII* for oboe," *Mitteilungen der Paul Sacher Stiftung* 16 (March 2003): 38.

between line 10, measure 4 and line 10, measure 9, where G6, the aggregate-fulfilling pitch of the primary series, enters, and is subsequently dramatically repeated.³¹

The "golden mean," or "golden ratio," refers to a proportional division into two parts whereby the relationship of one part to the other is represented by the (approximate) ratio 1:1.618. This relationship of the smaller part to the larger is equivalent to the relationship of the larger part to the complete whole. In other words, the point of division representing the golden mean in *Sequenza VII* occurs at approximately 62 percent of the way through the piece, according to the given timed durations, which roughly coincides with the appearance and dramatic reiteration of G6, the moment or area that has been traditionally called the climax. This occurrence of the climax at approximately the golden mean, roughly two-thirds of the way through the work in terms of actual given durations in seconds, divides the piece into two main sections that are temporally proportionally balanced. In support of this interpretation, Patricia Alessandrini's discussion of form and performance of *Sequenza VII* focuses on the temporal proportion of the two main sections. She implies that the best performances maintain this large-scale temporal proportion, regardless of whether the designated duration of each line (or any other smaller subsection, for that matter) is maintained.³²

Jacqueline Leclair identifies three main formal sections in *Sequenza VII*; the third division aligns with the apparent climax. The second section is delineated by the only two "silent" fermatas in the piece; these are fermatas that occur on rests. All of the other fermatas occur on sustained notes in the solo part. Further, as the piece is notated in a grid-like format with measures of traditional notation contrasted with measures of proportional notation (which fit into the grid in terms of duration in seconds) her explanation of these section divisions is supported by

31 Paul Roberts, "On Luciano Berio's *Sequenza VII* for oboe," *Mitteilungen der Paul Sacher Stiftung* 16 (March 2003): 38.

32 Alessandrini, "A Dress or a Straightjacket? Facing the Problems of Structure and Periodicity Posed by the Notation of Berio's *Sequenza VII* for oboe," in *Berio's Sequenzas: Essays on Performance, Composition, and Analysis*, ed. Janet Halfyard (Burlington, VT: Ashgate, 2007), 67-81.

the predominance of one of these two types of notation, or in the case of the second section, the alternation of these two types of notation. She presumes that the traditionally-notated material sounds "strict," and the proportional notation yields freer or improvised-sounding melodic material. (I alluded to these two types of notation earlier, referring to Boulez's "*temps lisse*," or amorphous time, and "*temps strié*," or pulsed time.) In fact, she recommends that performers emphasize changes in character that are, for her, inherent in the notation.

Alessandrini supports Leclair's section divisions by suggesting that the pitches and gestures that begin and end the sections help reinforce these divisions.³³ Further, using rests as dividers of sections, as Leclair does, seems intuitive from the point of view of a performer, and could have practical use in terms of organizing a performer's practice and preparation of the piece. A third interpretation has been offered by Gale Schaub, who divides the piece into five main sections, differing only from Leclair's in a subdivision of Leclair's first section. Each of Schaub's sections starts with B4 and ends with a fermata.³⁴

These interpretations of form, based on the traditional "build-up - climax - resolution" model and representing a linear temporal organization, are useful in some respects. On their own, however, they are not able to address the multiplicity of temporal organizations and other features that situate *Sequenza VII* more clearly in a postmodern context. In order to address some of these features of *Sequenza VII*, in Chapter 3 I will delve into other possible temporal organizations and interpretations of form, beginning with a discussion of a secondary fixed-register pitch series. Following this discussion, I will explain the score's unique grid-like construction and its notation and address the interpretive possibilities that arise due to the subjective perception of time passage. I will then present my ideas with respect to a spatial temporal organization, a "double-

33 Patricia Alessandrini, "A Dress or a Straightjacket? Facing the Problems of Structure and Periodicity Posed by the Notation of Berio's *Sequenza VII* for oboe," in *Berio's Sequenzas: Essays on Performance, Composition, and Analysis*, ed. Janet Halfyard, (Burlington, VT: Ashgate, 2007), 73.

34 Gale Schaub, "Transformational Process, Harmonic Fields, and Pitch Hierarchy in Luciano Berio's *Sequenza I* through *Sequenza X*" (PhD diss., University of Southern California, 1989), 146.

branched" temporal organization, and one way to interpret *Sequenza VII*'s "temporal dynamic form." Further, I will explain how these multiple temporal organizations are tied together.

CHAPTER III
ANALYSIS

The Secondary Fixed-Register Pitch Series

The primary fixed-register pitch series, whose aggregate-completing G6 plays a role in traditional interpretations of *Sequenza VII*'s form, will come into play in the temporal organizations I discuss in this chapter. In addition to the primary series, a secondary series will also play a role. Before the aggregate of the primary series is completed, pitch-classes originally restricted to one octave begin to appear in a second octave. I assemble these new pitch entrances in the order they appear to form a secondary series. Further, five pitch-classes later appear in a third octave. Figure 3 shows all pitches of the piece in order of first appearance. The primary series is given in open noteheads, and the secondary series and the five pitches appearing in a third octave are given in filled-in noteheads. D#5, the first pitch of the secondary series, and G6, the aggregate-completing pitch of the primary series, are circled.



Figure 3. Collection of all pitches in their order of appearance.³⁵
(Primary series is shown in open noteheads; secondary series and pitches appearing in a third octave are shown in filled-in noteheads.)

While *Sequenza VII* is not a serial or twelve-tone piece in a strict sense, there are vestiges of twelve-tone compositional process within it. Each of the two series of pitch entrances appears

³⁵ See Osmond-Smith, *Berio*, 34. This series of pitches has been discussed by Osmond-Smith and others.

only once. The secondary series begins when pitch-classes start to appear in new registers, initiated by D#5. My interpretation of this secondary series includes the initial B4, due to its significant role and continuous presence, so in a sense, these two series overlap. In fact, they seem to overlap twice: once with respect to the sharing of B4, and later following the appearance of Eb4, where D#5 first appears and the arrival of the last pitch of the primary series is anticipated.

The secondary series comes into play later in this paper with respect to a "double-branched" temporal organization and the notion of a metaphorical temporal folding. Figure 4 expresses the relationship between the two series in pitch-class integers, and also shows the entrances of the six pitches that appear in a third octave. I suggest that the early duplication of pitch-class 10 (Bb) belongs to the group of tripled pitch-classes. These three layers create a sense of multidimensionality, in some ways similar to Priore's example of row-form multidimensionality in *Sequenza I*.³⁶ Each level is related to the previous by pitch-class repetition, as shown by diagonal lines connecting pitch-class 3 of the primary series and pitch-class 3 of the secondary series, and pitch-class 1 of the secondary series to pitch-class 1 of the group of tripled pitch-classes. Further, three dyads recur, as shown by the bracketed and circled pairs.

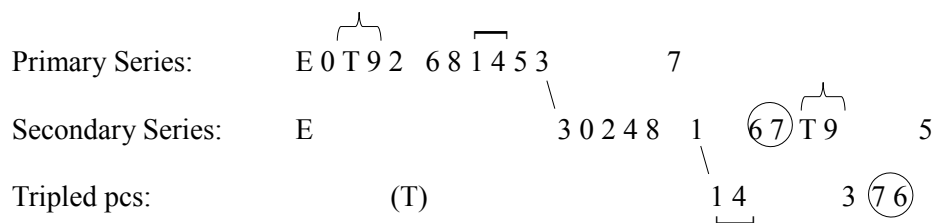


Figure 4. The relationship of the primary series, secondary series, and tripled pitch-classes shown in pitch-class integers. Recurring dyads are bracketed or circled.

³⁶ Priore, "Vestiges of Twelve-tone Practice as Compositional Process in Berio's *Sequenza I* for Solo Flute," 203.

The Temporal Grid in *Sequenza VII*

In this section, I will first provide a brief description of the score's grid-like structure. Following this description, I will discuss the role of the grid in an interpretation of form, in terms of both actual and perceived passing of time.

The score's grid is comprised of thirteen lines by thirteen subdivisions. I will refer to the subdivisions as "measures" for the sake of convenience. Each measure is given a specific designated timing in seconds. The designated timings per measure decrease in duration from left to right, and repeat thirteen times. The number thirteen seems to play some sort of compositional role. There are thirteen pitches in the primary series, the thirteenth pitch of which is the aggregate-fulfilling G6.³⁷ Further, as shown earlier in Figure 3, the first pitch of the secondary series, D#5, is actually the thirteenth pitch to be introduced into the harmonic texture, because the secondary series begins before the primary series is complete.

There are several fermatas in the score, but these are each given their own individual indicated duration; their durations are additional to the ones indicated above each measure. This means that while visually it appears that each line should have the same duration, when the timings are added up, the line durations actually vary from one to the next. Five of the lines don't contain additional timed fermatas, so these lines are the same duration: 22.6 seconds. Each of the other lines is a different, longer duration, due to the interpolation of timed fermatas. The total duration of the piece in clock time is calculated by adding the durations for each measure to the "extra" durations for the fermatas. It is possible to calculate, therefore, *Sequenza VII's* ideal duration in clock time, as designated by Berio. This duration is 414.8 seconds, or 6 minutes and 54.8 seconds. This global duration can be understood as a kind of absolute temporal organization against which performance times can be measured to check accuracy.

³⁷ Interestingly, as in *Sequenza VII*, Berio used a 13-pitch series in his piece *Nones*; one pitch is duplicated.

There is more to the grid's role than its use as an absolute temporal organization, however. In an interview with Bernard Weisser, Berio explains the purpose of the grid structure in *Sequenza I* for flute, and in so doing, suggests that the idea of a multivalence of temporal organizations in his music is, to some degree, intentional:

I think there are simultaneous considerations of a temporal, what do you call it, grid? But within this temporal grid there are other temporal considerations, other temporal, if you want, "organizations." So very often what happens, there is a temporal grid, maybe static, but the other ones [temporal organizations] are moving in a constantly mobile way. Sometimes the temporal grid is completely abstract, indifferent, like....metaphorically, like a "meter" that is indifferent to the rhythm, if you want.³⁸

In a sense, then, the grid sometimes acts behind the scenes as a kind of "phantom" temporal organization.³⁹ However, Alessandrini suggests a few ways in which the grid is audible, in the delineation of the introduction of pitches. For example, the first line contains only B4, the second line begins with the introduction of the next two pitches, C6 and B♭3, and the tenth line contains almost all of the iterations of G6, the aggregate-completing pitch of the primary series. She also examines whether a grid that could include the durations of the fermatas into its structure, thereby more closely visually representing duration, would reveal more about pitch structures (or "harmonic fields," a term used by Berio) or rhythmic periodicity. She determines that the original line lengths do in fact make the most sense. As a result, she suggests that the fermatas indicate moments of non-directionality, moments the performer could think of as time frozen.⁴⁰

The grid also has an effect on rhythmic periodicity, or rather, the perception of periodicity. Its structure, while divided into "measures," is not divided into regular durations, which inhibits a

38 Luciano Berio in an interview with Bernard Weisser. In Bernard Weisser, "Notational Practice in Contemporary Music: A Critique of Three Compositional Models (Luciano Berio, John Cage, and Brian Ferneyhough)" (PhD diss., The City University of New York, 1998), 248.

39 In Weisser's interview with Berio, he suggests that the grid structure (in *Sequenza I*) is essentially inaudible, and that it acts as a phantom temporal organization. Berio agrees: "Yes, kind of a phantom, exactly. Like in the *Sequenza* for flute, or in *Tempi Concertati*, this happens very often. But I will never be able to conceive...to attempt a time conception in a "univocal" way. There are always different phases that are important." In Weisser, "Notational Practice in Contemporary Music," 248.

40 Alessandrini, "A Dress or a Straightjacket?," 70-71.

sense of meter, and, when combined with the use of proportional notation, enhances a sense of aperiodicity. Proportional notation itself, derived from early tape music, where a certain amount of space equalled a certain amount of time, is often used for aperiodic passages, to show accelerando and decelerando.⁴¹ As explained by Weisser, proportional notation can "convey a sense of gesture or quasi-dramatic narrative," and "bring about a sense of rhythmic/temporal freedom."⁴² For example, while the opening measure's duration is designated as 3 seconds, a duration that is fairly simple to gauge for the average listener, two notes of equal duration fill up these 3 seconds, creating hemiola, if one second equals one beat. The second measure's duration is 2.7 seconds, a timing difficult enough to gauge on its own, which is made more difficult to gauge due to this hemiola. Further, this absence of meter and periodicity contributes to a slippery sense of time and duration because there are no metric markers to gauge the amount of time passed. The perception of the passing of time with respect to *Sequenza VII* plays a large role in a spatial conception of form. The use of a constant drone on the pitch B4 also contributes to a sense of timelessness or atemporality. I will presently discuss these issues of meter and periodicity in the context of perception, followed by an examination of the features of the B4 drone and its role in a spatial conception of form.

The Role Perception of Time Plays in Interpretations of Form of *Sequenza VII*

One's perception of duration or of the passing of time can influence conceptions of form. In this section, I will discuss the factors that affect the perception of time's passage, both in general and in particular, in the context of listening to or performing *Sequenza VII*. In this piece, the perception of time is affected by the the absence of meter, weak level of rhythmic periodicity (created in part by the use of proportional notation), and the continuous presence of the B4 drone.

41 Weisser, "Notational Practice in Contemporary Music," 1.

42 Weisser, "Notational Practice in Contemporary Music," 29.

I consider the perceptual ramifications of these factors in order to make two related points: that because the perception of time does not necessarily line up with clock time, the authority of a singular conception of form based on the linear formal premise of two proportionally related sections is weakened, and that it is therefore possible to base a conception of form more on perception than on the score.⁴³

In general, according to psychologist Thomas Cottle, clock time "does not adequately clarify subjective perceptions and spatial conceptions of time passage"; in other words, the amount of time we perceive having passed is not always correct.⁴⁴ Cottle and other researchers have studied the factors that affect one's perception of the passing of time and have come to some general conclusions. According to these conclusions, one's perception of time passed is influenced by the presence of external stimuli such as light and sound, sociological stimuli such as feelings of success and failure, and other factors such as the presence of danger. Emotional involvement can influence one's estimation of how much or how little time has passed.⁴⁵ Further, the amount of attention one gives to time when performing a task or observing an event also affects one's perception of it. When one pays less attention to time, duration seems shorter. Conversely, when one pays more attention to time, duration is perceived as longer.⁴⁶

With respect to experiencing or performing music, Kramer suggests that it is in fact possible that proportions that exist according to either absolute timings or through a visual representation may not actually be perceived, due to the presence of complicating factors:

We should not believe that the simple ratios we do find in many compositions are the only factors creating their formal balance... Linearity is both subject to and creative of pacing, changing rates of motion, changing amounts of information and redundancy, tensions and releases, and so forth, all factors critical to the temporal structure of most pieces. Thus

⁴³ See Kramer, "Postmodern Concepts of Musical Time," 22-23.

⁴⁴ Thomas J. Cottle, *Perceiving Time: A Psychological Investigation with Men and Women* (New York: John Wiley & Sons, 1976), 20.

⁴⁵ Cottle, *Perceiving Time*, 15-17.

⁴⁶ Simon Grondin, "Time Perception," in *Encyclopedia of Perception*, vol. 2, ed. E. Bruce Goldstein, (Thousand Oaks, CA: Sage Reference, 2010), 1005, E-book.

not only amounts of time but also changing rates of time contribute to temporal form. ...The relevance of proportions to musical time depends on the degrees to which time is perceived and on the ways in which time is perceived.⁴⁷

One of the main difficulties a performer encounters when learning *Sequenza VII* is aligning her/his perception of time with actual clock time, according to the required durations specified by Berio. Oboist Laszlo Hadady finds that his students unintentionally tend to expand the durations of *Sequenza VII* dramatically.⁴⁸ This unintentional expansion of time suggests that on some level an aural perception of durations in this piece does not necessarily coincide with those dictated by clock time. Jacqueline Leclair went as far as to create a re-notated and metered version of *Sequenza VII* due to her own and her students' difficulty respecting Berio's designated durations.⁴⁹

The absence of regular meter and the weak degree of perceived periodicity contribute to the possibility of an inaccurate perception of duration in *Sequenza VII*. These elements are visible in the score's grid and are apparent in the use of proportional notation. Alessandrini has studied and analyzed rhythmic periodicity in *Sequenza VII* in response to Leclair's re-notated and metered edition of *Sequenza VII* for oboe, published in 2001. Leclair's purpose was to create a notated version more accessible to performers and students who wanted to learn the piece but were intimidated by or uncomfortable with Berio's grid structure and proportional notation, and who may have found it difficult to respect Berio's designated durations. Alessandrini addresses problems that arose due to the publication of this re-notated version. One of the problems she addresses is whether the degree of rhythmic periodicity in Leclair's version contributes to "the perception of the way the piece is notated and in particular the perception of how much liberty it

47 Jonathan D. Kramer, *The Time of Music: New Meanings, New Temporalities, New Listening Strategies* (New York: Schirmer, 1988), 321.

48 Alessandrini, "A Dress or a Straightjacket?," 80.

49 Patricia Alessandrini, "Temporal Problematics Raised by Two Metric Versions of Luciano Berio's *Sequenza VII*: a Computer-Assisted Analysis and its Implications for Computer-Aided Composition" (PhD diss., Princeton University, 2008), 5.

allows the performer to take."⁵⁰ Alessandrini is able to show that the opening of Leclair's version of *Sequenza VII* can be interpreted as periodic on a particular contextual level, but this periodicity does not align with the meters. While Leclair's version introduces meters, it does not necessarily sound or feel any more metered or periodic than Berio's original unmetered version. Alessandrini also points out that "rhythmic complexity" increases in general over the course of the piece, which could have an effect on the perceived level of periodicity.⁵¹

The perceptual ramifications of nonmetric rhythmic structure are discussed by Joel Lester, who explains:

In music that projects a metric hierarchy we measure lengths of notes in terms of pulses at their metric level, not in terms of duration measured by clock time. I can conceive of no model that might explain how the mind could measure durations with any degree of accuracy and relate the lengths of these durations one to another without a pulse as a common denominator of two or more durations. In the absence of a metric hierarchy, many of the durations of the piece, no matter how metronomically they are performed, may not be perceptible in the manner implied by their notated duration.⁵²

In the context of *Sequenza VII*, the low level of rhythmic periodicity, along with the proportional notation, can have an effect on one's perception of time: they give the sense that time is more free, and one is less able to accurately gauge the amount of time passed because one is given fewer markers of time such as downbeats.

I consider the perceptual ramifications of the lack of meter, perceived aperiodicity, and the continuous presence of the B4 drone in order to make two related points. First, the fact that the perception of time does not necessarily line up with clock time weakens the authority of a singular conception of form based on the linear formal premise of two proportionally related sections, the first ending with a climax. I should make it clear, however, that I am not refuting the

⁵⁰ Patricia Alessandrini, "Temporal Problematics Raised by Two Metric Versions of Luciano Berio's *Sequenza VII*," 1. Alessandrini also analyzes the opening of *Chemins IV*, Berio's reinterpreted and orchestrated version of *Sequenza VII*, as it is also metered.

⁵¹ See Alessandrini, "Temporal Problematics Raised by Two Metric Versions of Luciano Berio's *Sequenza VII*," chapter 3.

⁵² Joel Lester, "Notated and Heard Meter," *Perspectives of New Music* 24 (Spring-Summer 1986): 123.

possibility that the golden mean proportion, used in traditional analyses of *Sequenza VII*, exists or is perceived; rather, I am pointing out that other compositional factors may interfere with the perception of it, which can lead to other (simultaneous) ways to perceive and understand form.

One can argue that, from the performer's perspective, these proportions are in fact maintained. In my own analysis of duration in five recorded examples of the piece, shown in Table 1 (page 48), I find that, while the total length of the piece differs from performer to performer—none of the performances align with the total piece duration as indicated by the score's timings—and smaller sections may not align with the designated durations, in general, the golden mean proportion of these two main sections is in fact more or less maintained according to clock time.⁵³ However, it is likely that these performers trained themselves to perform with particular durations or proportions, and were not simply relying on instinct; the interpretations these performers put forth in professional recordings are not their first performances.

In this respect, I speak from personal experience: as Hadady pointed out, it is common to unintentionally lengthen the given durations when learning the piece. I too have encountered this problem, and had to make special efforts and create particular strategies to overcome it. Additionally, Heinz Holliger, the oboist to whom *Sequenza VII* was dedicated, recorded the piece twice, once in 1969, and again in 1976.⁵⁴ These two recordings, by the same performer, differ dramatically in overall length and pacing. The total duration of the 1969 recording is a minute and twenty-five seconds longer than Berio's designated total duration, but the 1976 recording is only off by a few seconds. The fact that the later recording is much more accurate in terms of overall duration suggests that Holliger likely consciously addressed this issue.

⁵³ The purpose of Table 1 is to show that the parallel durations from the beginning to the climactic G6 area and from the appearance of D#5 in line 7, measure 5 to the end, are present in both the score and in recordings, when a broader view of the climactic area is understood. Holliger's early recording from 1969 appears to be the least accurate not only in terms of total duration but also in terms of exhibiting these parallel durations. The 1969 recording was the very first recording of *Sequenza VII*.

⁵⁴ The 1976 recording is a live recording.

The second point I make, which concerns the next section of this paper, is that it is possible to base a conception of form more on perception than on notation or absolute duration. According to Kramer, it is possible for temporal structures to reside within the listener, a notion that reflects a "quintessentially postmodern attitude" and offers additional possibilities as to the interpretation of form.⁵⁵ A dramatic example of this is suggested by Stoivanova, whereby the form of *Sequenza VII* is interpreted atemporally. Due to the unifying and continuous presence of the B drone, which contributes to a sense of timelessness, time can be understood in an instant: "The permanent reference to a stable sound defines the whole piece in a complete moment..."⁵⁶ In the section that follows, I will discuss this particular idea of form grasped as a spatial construct. Before doing so, I will provide an introduction to the use of drone in *Sequenza VII*, and discuss the ways it can affect our perception of time and contribute to an atemporal interpretation of form.

Introduction to the B4 Drone

A drone on the pitch B4 is sustained for the duration of the *Sequenza VII*, operated or performed by someone other than the performer, who begins the drone at the precise moment of the performer's first attack, and ends the drone with the performer's last attack. Berio's note at the bottom of the 1971 published score is as follows:

A B natural must sound throughout the piece. The sound-source should preferably not be visible; this can be an oscillator, a clarinet, a pre-taped oboe, or something else. The intensity should be kept to a minimum, with quite small variations. The B natural should give the impression of lending a slight resonance to the solo oboe.⁵⁷

⁵⁵ Kramer, "Postmodern Concepts of Musical Time," 22-23.

⁵⁶ Stoianova, 435. Translation mine.

⁵⁷ Luciano Berio, *Sequenza VII* (London: Universal Edition, 1971; Wien: Universal Edition, 2001). See note at the bottom of the score. This note also appears in German and French. The English translation is slightly different in Leclair's 2000 re-notated edition which is printed on the reverse side.

Historically, drones are found in Indian classical music, folk music with bagpipes, minimalist works such as those by Steve Reich and LaMonte Young, spiritual works such as those by Arvo Part, avant garde works such as those by Rahsaan Roland Kirk and Evan Parker, in nature, such as in the cicada drone, and in the practice or act of meditation. Drones are often associated with altered states of consciousness, which in turn can alter perception of time. In Indian Classical music, the tanpura, a long-necked string instrument, is used to perform the drone that is sustained for the duration of a piece. The timbre it produces is highly resonant, made more so by the addition of what are called "life-giving threads" (*juari*).⁵⁸ The drone's role in Indian music is not only practical, in helping the performer retain a constant sense of tonic, but also spiritual:

The soloist represents the embodied consciousness of the individual (*jīva*); the ceaseless tānpurā drone—on the one hand integral to the performance, on the other hand unaffected by it, as if uncaused and free from causation—creates the image of the universal, unchanging consciousness (*puruṣa* or *brahman*). The performer seeking to merge his *swar* with the ethereal tānpurā enacts the quest for union between self (*ātman*) and being that represents consciousness in its most elevated sense.⁵⁹

Karlheinz Stockhausen, one of Berio's contemporaries at the Darmstadt summer courses in the 1950s and 60s, was influenced in a significant way by his experience listening to a mechanical drone. For Stockhausen, this experience led to a reinterpretation of temporality. "The American experience (in 1958) of constant aeroplane flights, and listening to the 'inner transformations' of the long drone of aeroplane engines, led to what Stockhausen subsequently termed 'an expansion of the time-scale.'"⁶⁰ Further, Stockhausen's electronic works often contain drones. Stockhausen experimented with different types of temporal organizations based on alternative perceptions of time, including what he called "moment form."

⁵⁸ Edward C. Carterette, Kathryn Vaughn, and Nazir A. Jairazbhoy, "Perceptual, Acoustical, and Musical Aspects of the Tāmburā Drone," *Music Perception* 7, (Winter 1989): 75.

⁵⁹ David Clarke and Tara Kini, "North Indian Classical Music and Its Links with Consciousness: the Case of Dhrupad," in David and Eric Clarke, eds., *Music and Consciousness: Philosophical, Psychological, and Cultural Perspectives*, (New York: Oxford University Press, 2011), 150-151.

⁶⁰ Richard Toop, "Stockhausen, Karlheinz," in *Grove Music Online, Oxford Music Online*, <<http://www.oxfordmusiconline.com/subscriber/article/grove/music/26808>> (accessed September 1, 2012).

Perception of time and consciousness, then, can be affected by drones, in their continuous, unchanging, and a-climactic structure. With respect to *Sequenza VII*, I have begun to propose a spatial conception of form, related to what Kramer would call "vertical time," due to the presence of aperiodic rhythmic structures, the aural interpretation of proportional notation, and the atemporal perceptual effects of the B4 drone. The drone, in a sense, defeats directionality, by focusing one's attention on the vertical realm instead of the horizontal. In fact, the drone plays a further role in contributing to a spatial conception of form, with respect to both physical space and pitch space, which I will now explain.

The Components of a Spatial Conception of Form

The B4 Drone/Axis and Centricity in Pitch Space

The B4 drone, usually heard at a distance from the performer, perhaps situated backstage, acts as an echo, creating the illusion of resonance and initiating a physical spatial relationship which is immediately evident in a live performance. The physical spatial relationship between soloist and echo is heightened by the invisibility and careful acoustic placement of the drone's sound source, which contributes physically to the idea of the drone as a memory of the initial B4. This idea recalls Berio's use of physical space in his orchestral works, and for example, the placement of a group of violins at the back of the orchestra as in *Epifanie* (1991) or *Sinfonia* (1968) to act as an "echo chamber."⁶¹ The drone could also be thought of as giving the illusion of resonance of the soloist's tone, similar to the way in which the piano facilitates resonance of the trumpet's tone in *Sequenza X* (1984).

In addition to this physical relationship, the B4 drone and the use of B4 as a structural pitch in the soloist's part allow for spatial relationships to form in pitch space. These relationships

61 David Osmond-Smith, "Berio, Luciano," in *Grove Music Online, Oxford Music Online*, <<http://www.oxfordmusiconline.com/subscriber/article/grove/music/02815>> (accessed May 7, 2012).

involve the vertical dimension, as the everpresent B4, on the highest level of structure, and other pitches such as D#5, F#5, F5 and A5, at a lower level of structure, are used as quasi-tonal centers and inversional axes, creating symmetrical or near-symmetrical vertical pitch structures. Berio's implied polyphony, another spatial construct, will be incorporated here: the premise of implied polyphony allows for a global graphic interpretation of spatial form in *Sequenza VII*, as will be shown in Figure 20 (page 39), in which the pitches, in order of entrance, are organized in lower and higher layers in relation to the B4 axis and represent the highest level of implied polyphony apparent in the piece.

With respect to the role of the B4, Berio himself has defined it as a kind of "tonic."⁶² In listening, there is, in fact, a general sense that this pitch holds the piece together, and its presence is easy to identify at any moment. Beyond the drone itself, B4 recurs frequently, either sustained or re-articulated. The piece begins and ends with a B4, with the same articulated attack, and B is never found in the piece in any octave other than its initial octave, reinforcing the spatial strength of B4. The premise of using a fixed pitch as spatial center can be found in other works of Berio. In fact, Berio's description of the role of the recurrent B flat in *Allelujah II* can be applied, in part, to *Sequenza VII*:

The most important instrument in *Allelujah II* is the flute and the most prominent note is Bflat. It is round that pitch centre that related harmonic fields, constellations and structures rotate. The piece starts with that note and ends with it—it is sounded by the flute in the second instrumental group. The Bflat is present practically throughout and serves as a kind of focal point amidst the complex and rather centrifugal musical processes.⁶³

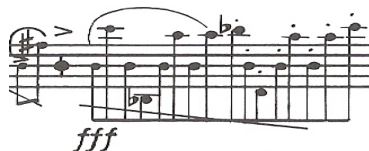
This description applies to *Sequenza VII* in that "centrifugal musical processes" are clearly present in the piece, and the B4 acts as a quasi-tonal center around which the pitches orbit or from which

⁶² Luciano Berio, trans. David Osmond-Smith, liner notes to *Berio Sequenzas*, Ensemble Intercontemporain. CD. (Deutsche Grammophon, B0015RZORQ, 1998).

⁶³ Luciano Berio, *Two Interviews with Rossana Dalmonte and Bálint András Varga*, ed. David Osmond-Smith (New York: Marion Boyars, 1985), 154.

they radiate. These orbiting or radiating pitches form symmetrical and near-symmetrical structures in pitch space.

While *Sequenza VII* is an atonal work, B4 acts as a pitch center, and other axes or centers become prominent in certain passages. Centricity is common in atonal musical contexts. According to Joseph Straus, "notes that are stated frequently, sustained at length, placed in a registral extreme, played loudly, and rhythmically or metrically stressed tend to have priority over notes that don't have those attributes." He further suggests that in centric contexts tonality often operates "like a ghost, haunting the structure with its presence, but impossible to pin down in any satisfactory way."⁶⁴ Centricity is exemplified in *Sequenza VII* not only by the use of drone, but also by the use of pitch axes. In *Sequenza VII*, and in general, the pitch representing an axis need not be physically present for the axis to exist, though it often is. Repetition of a pitch does not automatically define it as an axis, though an axis's pitch is often repeated or emphasized in one or more of the ways Straus describes. B4, initiated at the opening and regularly recurring in the instrumentalist's part, is the primary axis. There are secondary axes as well. This hierarchical relationship between axes shifts depending on context. For example, in the context of the piece as a whole, B4 is the primary axis. However, shifting configurations of pitches allow other axes to become primary in certain passages. In Figure 5, B4's function as an axis is demonstrated by the orbiting of pitches around it.



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Figure 5. Pitches orbiting about the B4 axis.⁶⁵

⁶⁴ Joseph N. Straus, *Introduction to Post-Tonal Theory*, 3rd edition, (New Jersey: Pearson Prentice Hall, 2005), 130-131.

⁶⁵ Luciano Berio, *Sequenza VII* (London: Universal Edition, 1971; Wien: Universal Edition, 2001).

It is important to consider that in the context of this spatial analysis, pitch space takes precedence over pitch-class space. This guideline is applied by Jonathan Bernard in his examinations of the role of spatial constructs in the music of Messiaen, Ligeti, Varèse, Bartók, and Carter.⁶⁶ Bernard explains: "In a truly spatial context...criteria of absolute size and distance, in their vertical sense, must form the basis of structure."⁶⁷ This means that octave equivalence, the premise pitch-class space is based on, is less relevant here. Accordingly, absolute interval sizes and pitches with their octave designation will mainly be used in this paper.

Symmetrical and Near-Symmetrical Pitch Structures

In this section I address the role of symmetrical and near-symmetrical structures that form in pitch space. Within the primary series, the symmetrical and near-symmetrical structures that form include a symmetrical wedge, hexachordal contour near-inversion, and symmetry of several pitches about three main axes.⁶⁸ Further, a dynamic symmetrical harmonic relationship exists between B₄, F₅/F_{♯5} and C₆, and an important near-symmetrical vertical pitch relationship exists between the highest pitch (G₆), lowest pitch (B_{♭3}), and D_{♯5}, the pitch that is not only situated at the physical visual center of the score's grid but is nearly equidistant from B_{♭3} and G₆.

The axes employed in *Sequenza VII* facilitate the formation of both symmetrical and nearly symmetrical structures in pitch space. Examples of exact symmetry are shown in Figures 6 through 10. Figure 6 demonstrates inversional symmetry about F_{♯5}, in that B₄ and C_{♯6} are both a perfect fifth away, in line 4, measure 8; in line 5, measure 1, A_{♭5} and D₄ are both 9 half-steps away from B₄ (Figure 7), and in line 4, measure 8 (Figure 6), measure 10 (Figure 8), and

⁶⁶ See, for example, Jonathan Bernard, "Space and Symmetry in Bartok," *Journal of Music Theory* 30, no. 2 (Autumn 1986): 185-201, and "Pitch/Register in the Music of Edgard Varèse," *Music Theory Spectrum* 3 (Spring 1981): 1-25.

⁶⁷ Jonathan Bernard, "Pitch/Register in the Music of Edgard Varèse," *Music Theory Spectrum* 3 (Spring 1981): 4.

⁶⁸ The primary series was demonstrated in Figure 1, on page 11.

measure 12 (Figure 9), and line 5, measure 11 (Figure 10), F#5 and E4 are inversionally symmetrical by 7 half-steps about B4.

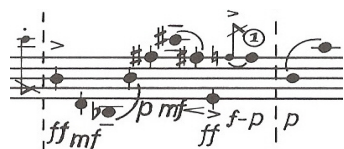


Figure 6. Line 4, m. 8



Figure 7. Line 5, m. 1



Figure 8. Line 4, m. 10



Figure 9. Line 4, m. 12



Figure 10. Line 5, m. 11

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Figures 6 through 10. Excerpts demonstrating exact inversional symmetry.

Exact symmetry is also found within the primary fixed register pitch series. Arranging the pitches of the primary series in ascending order reveals several symmetrical relationships about three possible axes. These axes are B4, F5/F#5, and A5. The primary axis, B4, and the pitches that orbit symmetrically around it are shown in Figure 11, and the secondary axes, F5/F#5 and A5, and their orbiting pitches, are shown in Figures 12 and 13.⁶⁹

⁶⁹ C6 is also symmetrically placed between F5 and G6, and G#5 is symmetrically placed between F#5 and Bb5, however, these won't be considered significant axes here.

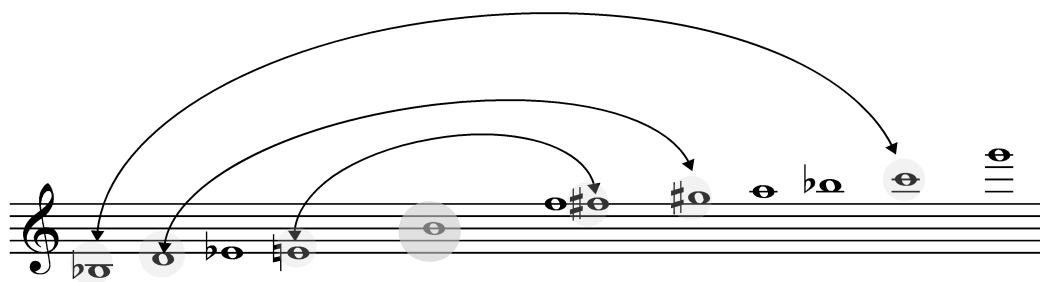


Figure 11. Primary Series, Primary Axis of Symmetry (B4), and orbiting pitches.

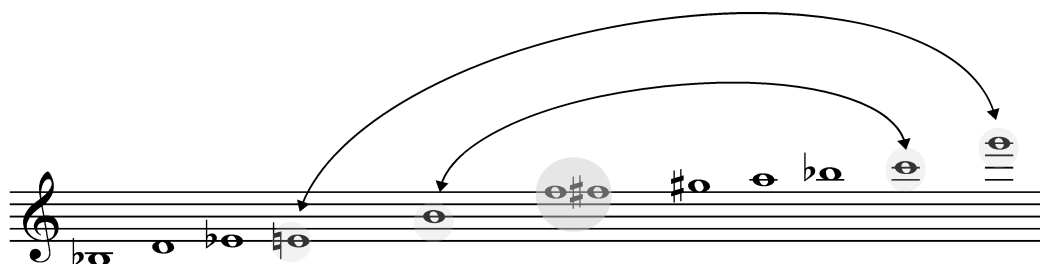


Figure 12. Primary Series, Secondary Axis of Symmetry (F5/F#5), and orbiting pitches.

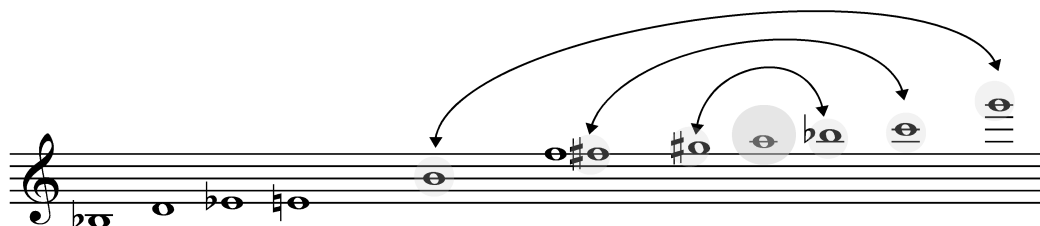


Figure 13. Primary Series, Secondary Axis of Symmetry (A5), and orbiting pitches.

The F5/F#5 axis in Figure 12 facilitates inversional symmetry where the pitches involved are an odd number of half-steps apart. I consider F5 and F#5 interchangeably, as a dual axis, as shown in Figure 12 and also below in Figures 14 and 15, since the axis Berio employs is actually a pitch between F and F#, which does not exist in equal-tempered pitch space. (There are 13 half-steps separating B4 and C6, the two main pitches that define this axis, and thirteen isn't divisible

by two.)

Figure 14 demonstrates a dynamic relationship this dual axis makes possible. Traditional harmonic function is not employed in *Sequenza VII*, but the perfect fifths, B–F# and F–C, create a sense of stability, while the tritones, B–F and F#–C, create instability. Half-step fluctuations occur frequently in the piece, often between perfect and diminished fifths. The dynamic tension between the three intervals contained within this configuration—perfect fifth, tritone, and half-step (and half-step plus octave)—is due to the presence of the dual F5/F#5 axis, which creates mirror-like inversion.

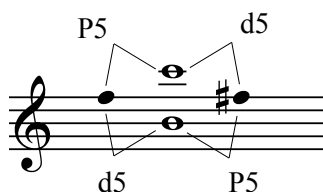


Figure 14. Dynamic symmetrical harmonic relationship between B4, F5/F#5, and C6.

Berio uses the fifth relationships created by this configuration throughout the piece, sometimes incorporating C#6 as well.⁷⁰ Figure 15 demonstrates the use of the F5/F#5 axis through the B4–F5/F#5–C6/C#6 configuration, along with other orbiting pitches.

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Figure 15. Line 11, mm. 7-13; pitches orbiting around the dual F5/F#5 axis.

⁷⁰ C6 is another important pitch; it is the second pitch to appear, the second-to-last pitch of the piece, and the second most recurring pitch after B4. B4, F#5, and C6 are the last three pitches of the piece as well as the first three pitches to which Berio applies a fermata.

On their own, F#5 and F5 each serve various organizational roles. One of the functions of F5 within this series is demonstrated in Figure 16 in the symmetrical configuration of its last three pitches, which echoes the symmetrical configuration of its first three pitches.⁷¹ Pitches 2 and 3, C6 and B♭3, are inversionally symmetrical about the B4 axis, by 13 half-steps above and below. The last two pitches, E♭4 and G6, are inversionally symmetrical about the third-to-last pitch, the F5, by 14 half-steps.

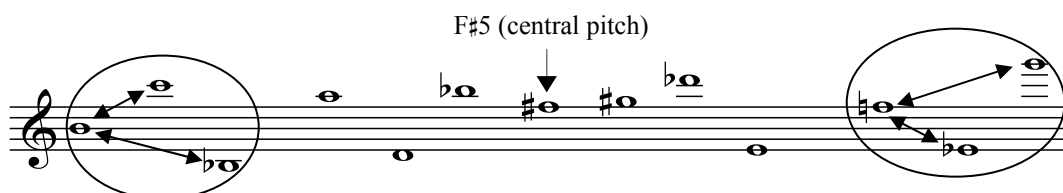


Figure 16. Two parallel examples of symmetry within the primary series.

One of the roles of F#5 is as the seventh and center pitch of the thirteen-pitch primary series. Since Berio referred to the B4 as a kind of "tonic," the F#5 could be thought of as a "dominant," towards which the pitches in the first half of the series progress, as shown in Figure 17. The spatial configuration of pitches is apparent in the symmetrical progression present within the first half of the primary series, which contracts melodically by thirds following the initial expansion by ninth from B4.

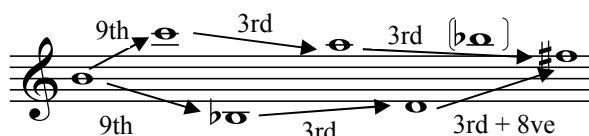


Figure 17. Near-symmetrical pitch wedge formed within the first seven pitches of the primary series.⁷²

⁷¹ F#6 and F6 also happen to be the last two pitches to be introduced in the piece.

⁷² See Jonathan Bernard, "Space and Symmetry in Bartók," *Journal of Music Theory* 30, no. 2 (Autumn 1986): 185-201. Similarly, Bernard and others have discussed the symmetrical structures found in the music of Bartók. For example, in Bartók's *Music for Strings, Percussion, and Celesta* the "head-notes" of the fugal entries form a symmetrical wedge about A3.

The function of the second B \flat in the initial pitch series becomes clear when one considers the contour of the series, as shown in Figure 18. Excluding the B $_4$, which itself has other functions, the contour of pitches 2-7 nearly maps onto pitches 8-13 in retrograde, as if the contour of pitches 2-7 were folded horizontally over a vertical axis. The primary series balances several symmetrical and near-symmetrical structures. In this example, there is a distinct relationship between partial pitch inversion and near contour retrograde. The contour of pitches 2 to 7 is represented by the ordered group <614253>, 1 representing the lowest pitch of the six, and 6 representing the highest. The contour of pitches 8 to 13 is represented by <452316>, which is very nearly a retrograde of the contour of pitches 2 to 7. Exact contour retrograde is thwarted by the pairs of pitches that are inversionally symmetrical about G $_5$: these pairs are F \sharp_5 and G \sharp_5 , and A $_5$ and F $_5$. These pitches represent either 4 or 3 in the ordered contour groups. However, the retrograde repetition of the *general* contour of pitches 2 through 7, especially with regard to the alternation of pitches above or below the B $_4$ axis, is still apparent visually, as shown in Figure 18. The duplication of pitch-class B \flat in the primary series makes possible this approximate hexachordal contour retrograde.

(inversion about G $_5$)

1 2 3 4 5 6 7 8 9 10 11 12 13

contour segments: <6 1 4 2 5 3> <4 5 2 3 1 6>

Figure 18. Simultaneous contour near-retrograde and partial inversional symmetry within the primary series.

A significant near-symmetrical relationship found at a higher level involves the pitch D#5. The entrance of D#5 is found in the exact center of the score's grid, D#5 is the first pitch of the secondary series, and D#5 plays an important role in the double-branched interpretation of form that I will explain in the next section.⁷³ The pitch D#5 falls vertically midway between the lowest pitch, B♭3, and the highest pitch, G6.⁷⁴ The distance between B♭3 and G6 is 33 half-steps, whose dividing axis is not possible in equal-tempered pitch space because it's an odd number of half-steps. D#5 is 17 half-steps above B♭ and 16 half-steps below G6, as shown in Figure 19. This vertical relationship is also visible in Figure 20.

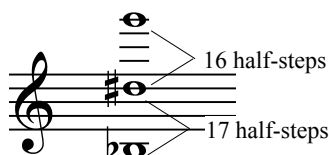


Figure 19. Near-symmetrical spatial relationship between the lowest pitch, B♭3, the highest pitch, G6, and D#5, the vertical axis.

Temporal Verticality and Omnidirectionality

These spatial and symmetrical structures, in their ensemble, help create a sense of what composer Jonathan Harvey calls "omnidirectionality;" they help direct one's attention to the vertical dimension. Harvey uses the term "omnidirectionality" to explain the effect of the presence of symmetrical structures in Webern's music, and it applies similarly to *Sequenza VII*.⁷⁵ Harvey's explanation of the role of an axis in Webern's music also applies to *Sequenza VII*, to a certain degree:

⁷³ See Figure 15. In this Figure, I have labelled D#5 as pitch 11 of the secondary series to reflect the metaphorical temporal reversal. In a linear interpretation, it is the first pitch that doesn't belong to the primary series.

⁷⁴ D5 is just as close as D#5, however, D#5 is the most logical axis in the context of the piece due to the other significant roles it serves.

⁷⁵ Jonathan Harvey, "Reflection after Composition," *Contemporary Music Review* 1 (1984): 83-84.

Several composers after Webern, myself included, have been fascinated by harmonic structures which radiate out from either side of a central axis in reflecting intervals. Unless a strong contrary line is taken in atonal music, the bass will remain at the bottom of what sounds like dissonant music. But in symmetrical mirroring structures, it is forced, focal attention is forced, into the axial middle, because all relationships converge there: the sounds point to it...⁷⁶

While the symmetrical and near-symmetrical structures in *Sequenza VII* are not as strict as those in the music of Webern, they do play a role in a spatial interpretation of form which is related to the perception of an atemporal temporal organization, or the idea that the whole piece can be grasped in a moment. The vertical quality inherent in this kind of interpretation of form was felt by Webern, according to Harvey, through a sense of timelessness:

The omni-directionality was seized on by Webern - it suited his sense of space, serenity, and timelessness (manifest also in his love of mountains, with their vast vistas and monumental immobility.) That he often spoke of floating feelings in connection with both mountain heights and axially symmetrical music is perhaps...most important...⁷⁷

Similarly, the presence of symmetrical and near-symmetrical structures in *Sequenza VII* directs one's attention to the vertical dimension and away from the horizontal or linear passing of time. This contributes to the sense of timelessness, which justifies a spatial or vertical interpretation of form. The drone further contributes to a sense of timelessness in its never-ceasing presence, but it also, in its role as a pitch axis, brings one's attention to the vertical pitch structures that form in relation to it.

The presence of the vertical symmetrical structures, the horizontal spatial polyphony discussed earlier, and the B4 drone come together in Figure 20, where the fixed-register pitches of both the primary and secondary series are placed spatially about the B4 axis. The graphic shows not only the vertical spatial relationship between the drone and the pitches, but also represents their physical location according to the visual grid. In Figure 20, the horizontal axis represents

⁷⁶ Ibid., 83.

⁷⁷ Jonathan Harvey, "Reflection after Composition," *Contemporary Music Review* 1 (1984): 84.

the B4, and the fixed-register pitches of the initial series are located in their positions about this axis. D#5 is in the center on the horizontal axis, and G6 is found at approximately two-thirds. The upper and lower large-scale planes of the piece, along with the center B4 plane, express a quasi-symmetrical structure that spatially represents a large-scale example of a polyphonic complex: the highest level of implied polyphony of the piece. One of the features of the structure shown in Figure 20 is its capacity to represent a geometric form that one can grasp in an instant.

Figure 20 offers a spatial perspective that also linearly reflects the location of events within the score's grid, including the location of G6 in the golden mean area. I will refer to this golden mean proportion again in the next section of the paper with respect to the relationship between D#5 and G6 in the context of a double-branched interpretation of form. Before doing so, I will review some of the traits postmodern music possesses according to Kramer, and explain some philosophical and phenomenological ideas that justify this double-branched interpretation and reaffirm *Sequenza VII*'s place in the postmodern musical repertoire.

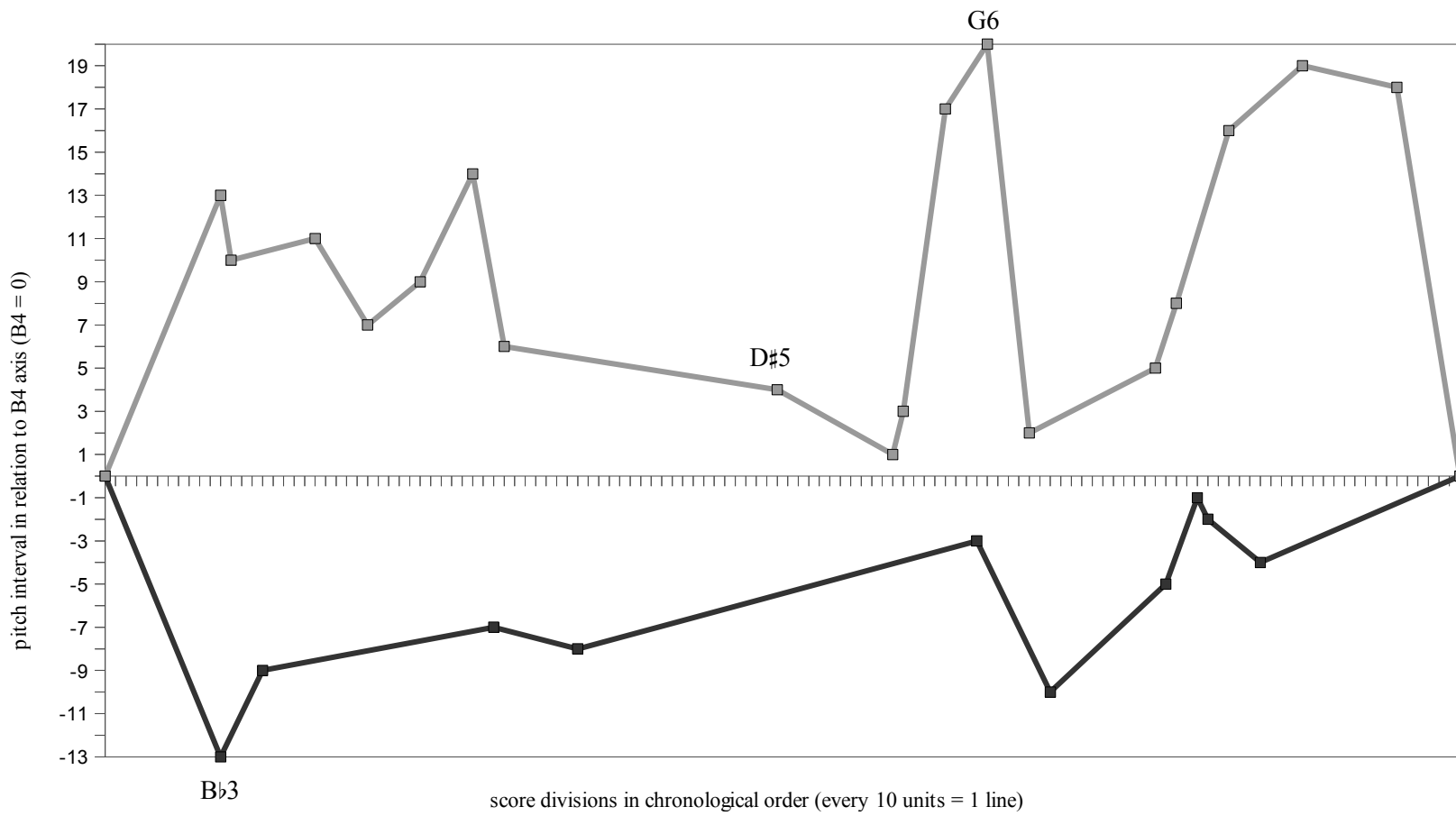


Figure 20. Polyphonic spatial complex based on the order of entry of pitches and the B4 drone/axis.

Postmodern Traits of *Sequenza VII*

In his article "Postmodern Concepts of Musical Time," Kramer lists fourteen traits he considers characteristic of postmodern music. In addition to number thirteen on his list, the claim that postmodern music "presents multiple meanings and multiple temporalities," which has been the focus of this paper, several other of these traits also apply to *Sequenza VII*. Number fourteen on his list—"locates meaning and even structure in listeners, more than in scores, performances, or composers"—speaks to the issues of perception of time that contribute to a spatial conception of form, a conception that is highly influenced by the B4 drone and one's experience of the piece as a result of this drone.⁷⁸ Number three on his list, "does not respect boundaries between sonorities and procedures of past and present," and number eleven, "includes fragmentations and discontinuities," apply to the double-branched interpretation of form I will discuss shortly.⁷⁹ In particular, the function of past and present in this context has affinity to some postmodern philosophical and/or phenomenological ideas of Friedrich Nietzsche, Henri Bergson, and Edmund Husserl.

To understand the premise of this double-branched interpretation, I consider the views of Husserl, Bergson, and Lochhead on the role of memory in this context. First, Husserl's phenomenological theories of the perception of time involve what he called "retention," a passive form of memory, and "recollection," an active form. When an event occurs, the memory of it remains but gradually fades away over time, in a process he called "running off." Different levels of retention occur simultaneously, as events occur and fade from memory. He also referred to "protention," the expectation of something to happen in the future.⁸⁰ Husserl's theory is explained succinctly by Don Ihde:

⁷⁸ Jonathan Kramer, "Postmodern Concepts of Musical Time," 22.

⁷⁹ *Ibid.*, 22.

⁸⁰ Don Ihde, *Listening and Voice: Phenomenologies of Sound*, second ed., (Albany: State University of New York Press, 2007), 91.

The coming-into-being of a perceptually temporal experience is spoken of as a "welling up" with a "leading edge" that Husserl often characterized as a *source point*. The other extreme of the field is a "running off" of phenomena in *retentions* that are sometimes characterized as *reverberations* or *echoes* that "sink" into the just-past. At their extreme point there is a horizon that transforms primary retention into genuine recollection that is the first genuine appearance of memory.⁸¹

Second, Bergson believed that through memory one can recapture the past; that present events occur at the same time as one remembers or reflects on past events.⁸² "Memory plays a special role in Bergson's philosophy of time. By virtue of memory, the past does not irretrievably disappear but rather effectively persists in the present. Present and past are inextricably bound in Bergson's notion of an instant as a temporally thick pulsation which resonates with the past."⁸³

Third, in Judith Lochhead's analysis of Roger Sessions's Third Piano Sonata she applies Sessions's own discussion of the main processes in his music that determine or give rise to form. Lochhead looks to one of these processes, "association or repetition," to explain the idea of a multiply-directed temporal interpretation of Sessions's sonata where the retrograde ending creates a kind of temporal reversal. This interpretation is based on the association, or "back-reference," of later pitches to earlier pitches, made possible perceptually by memory.⁸⁴ With respect to *Sequenza VII*, the concepts of association, recollection, and the interpenetration of past and present express the way in which the pitch-classes of the primary series are linked by the listener's memory of them to the pitch-class duplicates of the secondary series. The relationship of the two series from this perspective results in a double-branched interpretation of form in which the second branch figuratively folds back to the origin.

81 Ibid., 92.

82 Cottle, *Perceiving Time*, 12-13.

83 Judith Lochhead, "The Temporal Structure of Recent Music: A Phenomenological Investigation" (PhD diss., State University of New York, 1982), 95-96.

84 Lochhead, "Temporal Processes of Form," 165.

A Double-Branched Interpretation of Form

One way to explain the purpose of the pitches of the secondary series that begin to enter just prior to the appearance of the aggregate-completing G6 of the primary series is through this "multiply-directed" or "double-branched" temporal conception. The term "multiply-directed" expresses the notion of multiple simultaneous temporal streams. Kramer's definition of "multiply-directed time" is as follows: "If the implication in every section is continually frustrated by the subsequent section but is often realized elsewhere, then the musical time is multiply-directed. The multiplicity resides in the conflict between implied linearity on the foreground and realized nonlinearity on the middleground."⁸⁵ In this case, the piece's temporal directedness, or actual linear path through time, according to the entrance of pitches, follows two branches that overlap.

In the context of *Sequenza VII*, the completion of the chromatic aggregate (of the primary series) signifies a kind of premature ending. All pitch-classes are present, and there has been a dramatic musical moment involving the G6, the aggregate-completing pitch. However, the D#5, and the first few pitches of the secondary series, start to appear before the fulfilment of the primary series' aggregate, and initiate the opening of a secondary temporal stream (branch) in which the pitches of the secondary series accumulate to fulfill the aggregate of the secondary series. The relationship of the primary series to the secondary series via the positions of D#5 and G6 signifies a kind of temporal reversal, as shown in Figure 21, or a kind of pulling back to the B4, the aggregate-completing pitch of the secondary series. In order to show this, I have labelled the entrance of B4 "1" in the primary series, and "12" in the secondary series. Once the series, indicated in Figure 21 in dark numbers, reaches its eleventh pitch, E \flat 4, the sequence of pitches begins to fold back, figuratively, in the reverse direction. Pitch-class E \flat /D# is duplicated by the very next pitch, D#5, and the pitch-class duplications that follow belong to a secondary series,

⁸⁵ Kramer, *The Time of Music*, 58.

indicated in grey. (The pitches indicated in parentheses are the tripled pitch-classes.) In this sense, the first pitch, the B₄, is the 12th pitch of the secondary series, heard at the very opening of the piece, and begins a connection to the secondary series, whose 11th pitch, the D_#₅, occurs visually in the very center of the grid. Pitch-classes 11, 4, and 5 appear in three registers over the course of the piece, with their final pitch realizations appearing just before the final pitch of the piece. The repetition of these pitch-classes here causes a delay in linearly reaching the final pitch of the secondary series in the same way that the aggregate-completing pitch of the primary series is delayed by the beginning of the secondary series and the temporal reversal. Figure 22 diagrams what this double-branched conception of form, with temporal reversal, might look like graphically.

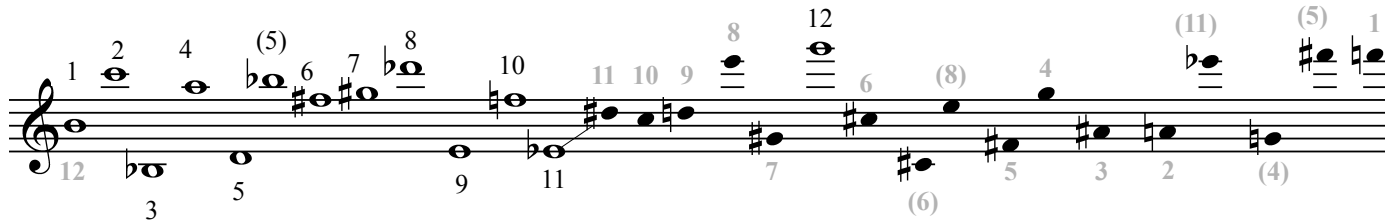


Figure 21. Labelling of the primary series and the secondary series to show a multiply-directed temporal conception of form.

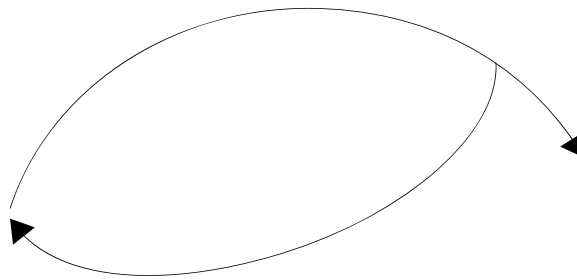


Figure 22. Double-branched form of *Sequenza VII*, showing temporal reversal.

The temporal concept that comes into play here is the notion of the symmetry of time, or the idea that it is possible to go either direction on the time continuum. Nietzsche and Bergson incorporated this idea into their philosophies of time. In Bergson's case, memory allowed for elements to "bear traces of their past," which in turn makes possible an understanding of time as the interpenetration of past and present.⁸⁶ Similarly, Nietzsche's doctrine of "eternal recurrence" advocates the notion that time is cyclical, that it repeats itself infinitely. As explained by Kathleen Higgins, "On the model of eternal recurrence, the past and the future collapse into one another. Because all moments of time recur eternally, all moments of the future have already occurred. But all past moments, because they will recur again, are also a part of the future."^{87,88}

I will now show how the double-branched analysis and figurative temporal reversal is further supported by a parallel durational relationship that exist between the beginning and ending boundaries of the piece and the positions of D#5 and G6. First, as a frame of reference, Figure 23 demonstrates the entrance of D#5 and the entrance of G6 visually, according to the score's grid. The D#5 appears halfway through the sixth line of the grid, the space from the beginning to its appearance taking up 50 percent of the grid, and the G6 appears almost halfway through the ninth line of the grid, with the space from the beginning to its appearance taking up 65 percent of the grid.⁸⁹ These durations do not include the timed fermatas which Alessandrini suggests could be perceived as moments of frozen time. The durations discussed here with respect to the score are based solely on the visual placement of pitches within the grid.

I am allowing some leeway in interpretation of climax, as Stoianova and Alessandrini have done, by suggesting there is a climactic area in which the G6 is active.⁹⁰ This climactic area

86 Lochhead, "The Temporal Structure of Recent Music," 321.

87 Kathleen Higgins, "Nietzsche and Postmodern Subjectivity," in Clayton Koelb, ed., *Nietzsche as Postmodernist: essays pro and contra*, (Albany: State University of New York Press, 1990), 208.

88 The notion of the symmetry of time also has resonances with Newtonian Time, Stephen Hawking's since-withdrawn theory of time reversal, and Kurt Gödel's rotating universe.

89 Alessandrini refers to the proportion of the G6 area in "A Dress or a Straightjacket...", 71-72.

90 Stoianova, 436.

can be defined approximately by the entrance of G6 in line 9, measure 5 and the end of the gesture in line 10, measure 9. The most active and dramatic moments involving the G6 are found between line 10, measure 6 and line 10, measure 9. The locations I consider in Figure 23 are the first entrance of G6, and the G6 attack in line 10, measure 6.

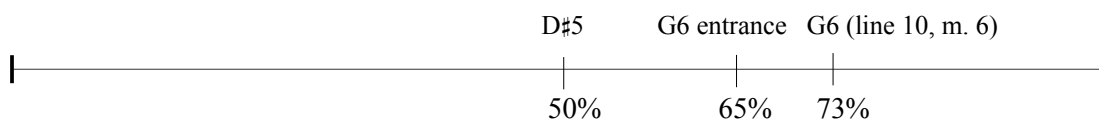


Figure 23. Position of D#5 entrance, G6 entrance, and G6 (line 10, m. 6) according to visual grid.

Next, in terms of actual temporal durations designated in the score by Berio, Figure 24 shows the temporal equidistance between the duration from the beginning of the piece to the end of the G6 climactic area, and the duration from the end of the piece backwards to the entrance of D#5. In terms of proportion, these parallel distances both nearly reflect the golden mean ratio of 1:1.61 (or 62.1%) in their relationship to the piece's total duration.⁹¹

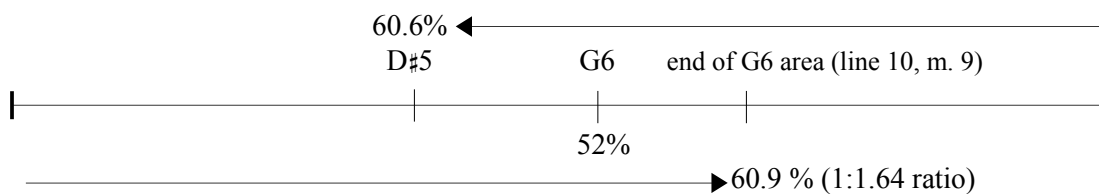


Figure 24. Position of D#5, G6 entrance, and end of G6 area according to temporal durations designated by the score. D#5 and the end of the G6 area (line 10, m. 9) are temporally equidistant from either end of the piece.

Further, the symmetrical temporal proportion shown in Figure 24, found to be present in the absolute temporal organization given by Berio, is similarly found to be present in recorded

⁹¹ While not related to the golden mean proportions discussed here, the entrance of the G6 occurs in time, according to Berio's score durations, at 52%, while the appearance of D#5 visually occurs at 50%, according to the score's grid. This relationship further links these two pitches across temporal dimensions.

performances of *Sequenza VII*. Since I have pointed to issues of perception throughout the analyses presented in this paper, I have examined the temporal perception of performers here: I have compared Berio's given durations to the durations that are revealed in a study of five recorded performances. The recordings I analyzed are those of oboists László Hadady, Jacqueline Leclair, Christopher Redgate, and Heinz Holliger, and saxophonist Claude Delangle. Table 1 indicates, in the far left column, the given temporal distance between D#5 and the end of the piece, according to score durations, as well as the identical duration between the G6 entrance and the beginning. For each of the recordings, I timed, to the nearest tenth of a second, four durations: the beginning of the piece until the entrance of G6, the beginning of the piece until line 10, measure 4, the beginning until the G6 attack in line 10, measure 6, and the end of the piece backward to the entrance of D#5. The G6 locations are all within the climactic area.

While the temporal equidistance according to the score involves the G6 entrance, the temporal equidistance in all of the recordings involves the G6 in line 10, measure 4, except for the Holliger recording, which involves the G6 attack in line 10, measure 6; in four of the recordings, the duration in seconds from G6 in line 10, measure 4 to the beginning most closely equals the distance from D#5 to the end, and in the Holliger, the duration from G6 in line 10, measure 6 most closely equals the distance from D#5 to the end. The table shows that despite vast differences (and, dare I say, inaccuracies) in total time between performers, the proportion of these two parallel sections is still very close for each recording, and also quite accurate, compared to the ideal proportions designated by the score's durations. These proportions are given and compared in the fifth and sixth rows of Table 1.

Duration	Score	Hadady (1999)	Leclair (2006)	Redgate (2006)	Delangle (1994)	Holliger (1976)
D#5 to end (s)	251.2	242.8	269.1	284.4	248.7	258.0
beg. to G6 entrance (s)	252.7	215.8	241.7	259.9	226.3	223.9
beg. to G6 in line 10, m. 4 (s)	243.1	244.4	271.2	289.9	252.3	250.5
beg. to G6 in line 10, m. 6 (s)	246.3	248.1	275.3	296.9	256.2	256.4
D#5 to end (%)	60.6	60.6	60.3	59.5	59.4	61.5
beg. to G6 location highlighted above (%)	60.9	61.0	60.8	60.6	60.2	61.1
Total time (s)	414.8	400.8	446.4	478.0	419.0	419.5

Table 1. Comparison of parallel temporal distances between the score and five recordings.

Temporal Dynamic Form in *Sequenza VII*

There is one further kind of temporal organization that reinforces the role of the entrance of D#5 as demonstrated in the previous temporal and formal analyses. The analysis I will now explain is one whose methodology is derived from the work developed by Joshua Mailman on what he has termed "Temporal Dynamic Form."

In Mailman's dissertation on temporal dynamic form, he defines "dynamism theory" as the following: "A dynamism theory (or analysis) is one that asserts motion, change, process, or energy (potential motion, change, or process) as existing in the course of piece or performance, as it elapses."⁹² Temporal dynamic form, then, is a kind of form that arises through the measuring of the rate of flux of a particular property, or properties, in a piece of music. This flux is shown in contour graphs. This particular method is work-specific; the analyst must choose a parameter (or parameters) on which to focus. Some of the properties Mailman analyzes in relation to specific works are vertical pitch density, "modal brightness," "temporal clumpiness," "viscosity," "pitch

⁹² Mailman, "Temporal Dynamic Form in Music," 8.

permeation," pitch variety, "pitch freshness," and motivic diversity, among many others. His rationale for this type of analysis of form is linked to cognitive, psychological, and phenomenological perspectives on how we hear and respond to music.⁹³

Figure 25 shows the flux of pitch freshness in *Sequenza VII*. Mailman explains some of the cognitive reasoning behind analyzing the flux of pitch freshness:

Listening for the flux of pitch freshness is to be aware of or attend to the fact that each time a pitch occurs its quality is colored by the context preceding it. For instance, upon the occasion that a pitch recurs, its quality differs from that of previous occurrences because, when it was heard previously, it was preceded by fewer occurrences of itself than is the case on occasion of recurrence. By the same token, the occurrence of different pitches each heard for the first time have in common the quality of being new.⁹⁴

This type of analysis deals with the premise of form as a cumulative process, a perspective also advocated by Lochhead.

The process for this analysis takes a few steps, but is easily set up with calculating and graphing software such as Microsoft Excel.⁹⁵ I followed Mailman's procedure for calculating the rate of pitch freshness, adapting it to suit *Sequenza VII*. First, I calculated the rate of "pitch scarcity." To do this, I tallied the number of occurrences of a particular pitch up to a certain point; I then calculated the reciprocal ($1/x$) of this number of occurrences. "Pitch scarcity" can be understood as the inverse of "pitch abundance," or the reciprocal of the number of occurrences of a particular pitch up to a certain point.⁹⁶ The rate of scarcity of a pitch is necessary in calculating pitch freshness because the scarcer a pitch is in the context of a particular passage, the higher its rate of pitch freshness. Next, I calculated the rate of "average pitch scarcity" by dividing the sum of all of the scarcity values up to a certain point by the total number of pitches up to the same

⁹³ See Mailman, "Temporal Dynamic Form in Music." The dissertation compiles many cognitive, psychological, and phenomenological perspectives on the subjects of time, hearing, consciousness, etc. in an in-depth way worth reading for more information in these areas.

⁹⁴ Mailman, 451.

⁹⁵ See Mailman, 448-452 for a more detailed explanation of these calculations.

⁹⁶ The process I'm using measures pitch freshness from a cumulative perspective, though Mailman also discusses it in terms of calculating the rate of pitch freshness of continually overlapping spans.

point. Lastly, I calculated the rate of "pitch freshness" for each pitch by dividing each "pitch scarcity" value by each "average pitch scarcity" value. These values are expressed in the temporal dynamic form graph in Figure 25. This graph accounts for every pitch in *Sequenza VII*. Note value is generalized here; there is no mechanism for expressing individual note value or duration. The graph represents the chronological progression of pitches, regardless of a pitch's duration since the quality of each pitch, as one might experience it in time, is expressed. However, the number of repetitions of a particular pitch can, in a general sense, express its duration. The fact that duration is not measured precisely in this graph does not pose a problem since the purpose of this graph is to show global temporal dynamic form with respect to pitch recurrence. Further, in earlier sections of this paper I have shown other ways to measure duration with respect to significant temporal locations in the piece.

Upon recurrence of a pitch, its level of freshness is lowered. This is the case, to the extreme degree, for the B4 in *Sequenza VII*, as it appears 362 times, when all repetitions are accounted for. All of the lowest measurements on the graph are reflective of this incessantly recurring B4. The highest levels of pitch freshness coincide with the introduction of the brand new pitches, and continue almost to the very end, with the entrance of the very last new pitch, the F6, in line 13, measure 5.

As I have previously pointed out, the D#5 has several roles, from various structural perspectives. D#5 is significant in that it is the first pitch to enter that is not part of the primary series. It is involved in a parallel symmetrical temporal relationship with G6, as seen in the doubled-branched interpretation. It falls in the visual center of score's grid. It is halfway between the lowest pitch and highest pitch as shown in the spatial interpretation. Further, it is also interesting to note that D#5 enters 26 measures after the penultimate pitch of the primary series, (the E♭4) which is halfway between E♭4 and the aggregate-completing G6.

D#5 plays yet another role here with respect to this interpretation of temporal dynamic form. In Figure 25, the highest levels of pitch freshness flatten out. By this I mean that following the entrance of D#5, all of the subsequent entrances of new pitches fall within 1 unit of measurement. In fact, in terms of levels, there appears to be a delineation between two parts of the graph: the highest levels prior to the entrance of D#5 (pitch 460) almost all fall between 6.5 and 8, and after the entrance of D#5, they jump to between 11 and 12. The distance between E \flat 4, the penultimate pitch of the primary series (pitch 284) and D#5, is apparent in Figure 25, as is the extended area of low pitch freshness before and after the D#5. This apparent division, due to the location of the entrance of D#5, further reinforces the role of this pitch as shown in the various other temporal organizations I have discussed in this paper. The graph demonstrates another alternative conception of form with respect to *Sequenza VII*: a representation of its global temporal dynamic form expressed via the flux of pitch freshness.

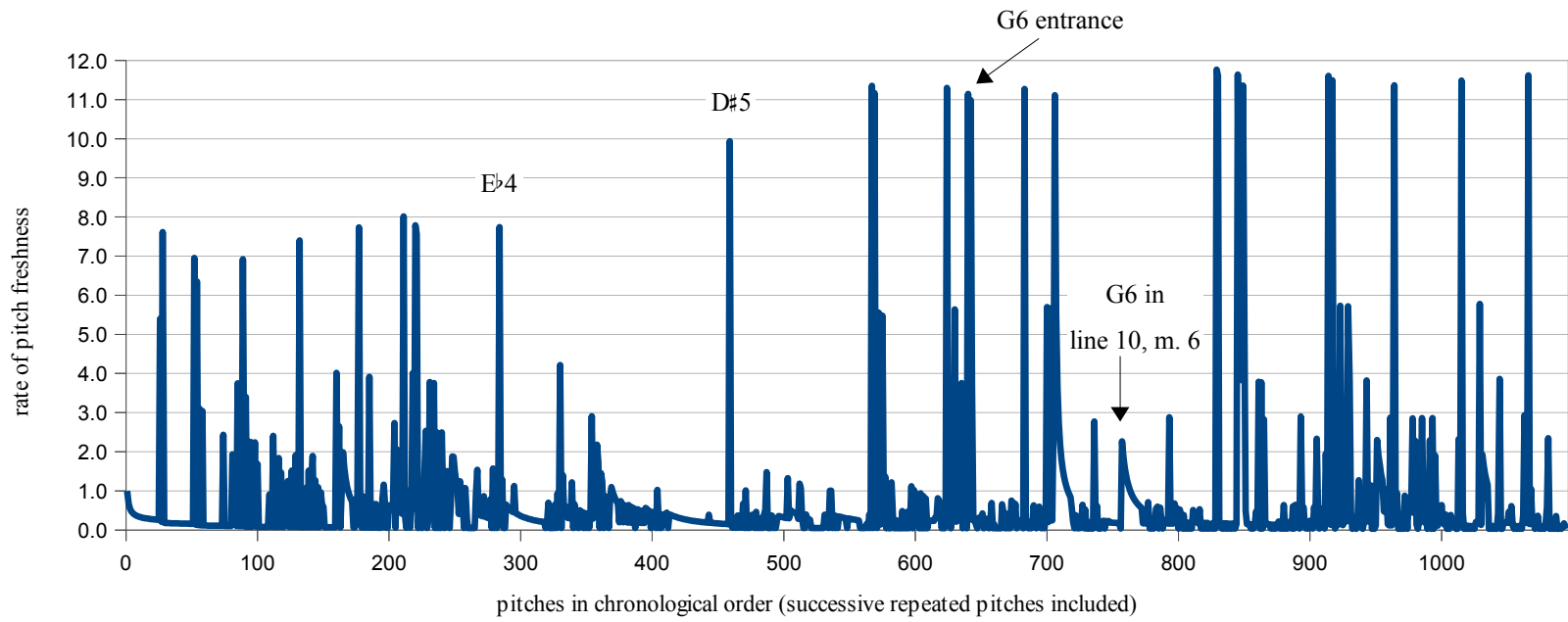


Figure 25. Temporal Dynamic Form expressing the rate of "pitch freshness" in *Sequenza VII*.
(successive contiguous pitch repetitions included)

CHAPTER IV

CONCLUSION

My argument that *Sequenza VII* implies five different temporal and formal schemes elaborates on Berio's claim that he approached temporality from a multivalent perspective and demonstrates how the piece can be understood in a postmodern context. The acceptance of a multiplicity of ideas and knowledges instead of the subscription to a single "Grand Narrative" is one of the main characteristics of postmodernist philosophy in general. Jean-François Lyotard, one of the philosophers who defined postmodernism in its early stages, uses the term "paralogy" to represent postmodernism's multiple narratives:

...Each discourse [is] judged in terms of what Lyotard calls 'paralogy,' the ability of parallel rather than hierarchically arranged knowledges to come up with a new move, an innovation. Lyotard welcomes what he envisages as the political outcome of this new condition, an end to the authoritarianism implicit in any claim to a totalizing understanding of the real – 'Let us,' he urges, 'wage a war on totality.'⁹⁷

Kramer's assertion that the presence of a multiplicity of temporal organizations is common to postmodern musical works reflects this postmodern value of pluralism and non-universality. It is exemplified in *Sequenza VII* through my demonstration of the parallel existence of multiple temporalities and their influence on corresponding conceptions of form.

Using the traditional interpretation of *Sequenza VII*'s form as build-up - climax - resolution as a starting point, I have shown how the golden mean proportion, claimed to be present in this traditional interpretation of form, also applies to a more postmodern interpretation, where symmetrical proportions from either end of the piece are revealed through the

⁹⁷ Antony Easthope, "Postmodernism and Critical and Cultural Theory," in Stuart Sim, ed., *The Routledge Critical Dictionary of Postmodern Thought*, (New York: Routledge, 1999), 20.

consideration of the entrance of D#5, a pitch found to be both linearly and spatially, or horizontally and vertically, significant. The temporal organizations that have come into play in this paper have involved linear time, as per the traditional interpretations of Leclair, Roberts, and Redgate; clock time, or absolute time, according to the score's grid; visual time, according to the proportional notation; vertical time, through an analysis of symmetrical and near-symmetrical pitch structures; dynamic time, such as in an examination of temporal dynamic form via the flux of pitch freshness, and Kramer's multiply-directed time, in a double-branched interpretation involving a metaphorical temporal reversal.

This principle of temporal multiplicity can likely be applied to other works of Berio. Among works that initially seem to be appropriate candidates include those that involve drone. Berio's use of drone is not limited to *Sequenza VII*; it can also be found in *Agnus* (1971), *There is No Tune* (1994), and *Altra Voce* (1999). Further, new analyses of *Chemins IV* (1975), *Sequenza VII*'s orchestrated reinterpretation, may also be possible. There are some temporal and formal similarities between these two related works, but *Chemins IV* uses traditional notation, is not notated on a grid, and is longer in actual duration. There are other harmonic differences, as well. Berio explains:

Chemins IV, for oboe and eleven strings, can be listened to as a commentary to my *Sequenza VII* for oboe (1969), a commentary that amplifies and develops certain harmonic aspects of the original *Sequenza*. The *Sequenza* becomes in fact the generator of new instrumental lines, which in turn make explicit its latent polyphony around a pivot - an ever-present B - that puts into perspective all the subsequent harmonic transformations. Like a reverberating chamber, the development of *Chemins IV* mirrors and shatters the elements of *Sequenza VII*, sometimes receiving their anticipated echo in such a way that for the listener the oboe part seems generated by the eleven strings.⁹⁸

The drone in both *Sequenza VII* and *Chemins IV* can have an effect on a listener in terms of the perception of time and plays a role in a conception of form as a spatial construct. With respect to

⁹⁸ Luciano Berio, *Chemins IV*, author's note, <http://www.lucianoberio.org/node/1349346997434=1> (accessed October 5, 2012).

Berio's claim that he would never be able "to attempt a time conception in a 'univocal' way" and in light of the spatial role of the drone in *Sequenza VII*, new formal analyses of these works, based on the consideration that time is not merely a linear construct, could prove enlightening.

BIBLIOGRAPHY

- Alessandrini, Patricia. "A Dress or a Straightjacket? Facing the Problems of Structure and Periodicity Posed by the Notation of Berio's *Sequenza VII* for oboe." In *Berio's Sequenzas: Essays on Performance, Composition, and Analysis*, edited by Janet Halfyard, 67-81. Burlington, VT: Ashgate, 2007.
- Alessandrini, Patricia. "Temporal Problematics Raised by Two Metric Versions of Luciano Berio's *Sequenza VII*: a Computer-Assisted Analysis and its Implications for Computer-Aided Composition." PhD diss., Princeton University, 2008.
- Berio, Luciano. "A Tribute to Joyce." *Classic Joyce: papers from the XVI International James Joyce Symposium*. Rome, 14-20 June, 1998.
- Berio, Luciano. *Chemins IV*. Author's note. <http://www.lucianoberio.org/node/1349?346997434=1> (accessed October 5, 2012).
- Berio, Luciano. Notes for *Berio Sequenzas*. Performed by members of *Ensemble Intercontemporain*. Translated by David Osmond-Smith. 3 CDs. Deutsche Grammophon, B0015RZORQ, 1998.
- Berio, Luciano. *Sequenza VII*. London: Universal Edition, 1971; Wien: Universal Edition, 2001.
- Berio, Luciano. *Two Interviews: with Rossana Dalmonte and Bálint András Varga*. Translated and edited by David Osmond-Smith. New York: Marion Boyars, 1985.
- Bernard, Jonathan. "Pitch and Register in the Music of Edgard Varèse." *Music Theory Spectrum* 3 (Spring 1981): 1-25.
- Bernard, Jonathan. "Space and Symmetry in Bartok." *Journal of Music Theory* 30, no. 2 (Autumn 1986): 185-201.
- Boulez, Pierre. *Boulez on Music Today*. Translated by Susan Bradshaw and Richard Rodney Bennett. Cambridge, MA: Harvard University Press, 1971.
- Carterette, Edward C., Kathryn Vaughn, and Nazir A. Jairazbhoy. "Perceptual, Acoustical, and Musical Aspects of the Tāmburā Drone." *Music Perception* 7, (Winter 1989): 75-108.
- Clarke, David and Tara Kini. "North Indian Classical Music and Its Links with Consciousness: the Case of Dhrupad." In *Music and Consciousness: Philosophical, Psychological, and Cultural Perspectives*, edited by David and Eric Clarke, 137-156. New York: Oxford University Press, 2011.

- Cottle, Thomas J. *Perceiving Time: A Psychological Investigation with Men and Women*. New York: John Wiley & Sons, 1976.
- Delangle, Claude. Sequenza VIIb. On *The Solitary Saxophone*. CD. BIS 640, 1994.
- Easthope, Antony. "Postmodernism and Critical and Cultural Theory." In *The Routledge Critical Dictionary of Postmodern Thought*, edited by Stuart Sim, 15-27. New York: Routledge, 1999.
- Grondin, Simon. "Time Perception." In *Encyclopedia of Perception*, vol. 2, edited by E. Bruce Goldstein, 1004-1007. Thousand Oaks, CA: Sage Reference, 2010. E-book.
- Hadady, Laszlo. Sequenza VII. On *Berio: Sequenzas*. Performed by members of Ensemble Intercontemporain. 3CDs. Deutsche Grammophon, B00000193T, 1999.
- Harvey, Jonathan. "Reflection after Composition." *Contemporary Music Review* 1 (1984): 83-86.
- Higgins, Kathleen. "Nietzsche and Postmodern Subjectivity." In *Nietzsche as Postmodernist: essays pro and contra*, edited by Clayton Koelb, 189-215. Albany: State University of New York Press, 1990.
- Holliger, Heinz. Sequenza VII. On *Berio: Sequenzas III & VII, Differences, Due Pezzi, Chamber Music*. CD. Newton Classics, 8802040, 1969/1970/2011.
- Holliger, Heinz. Sequenza VII. On *Luciano Berio: Points on the curve to find..., Folk Songs, Sequenza VII, Laborintus II*. CD. Ermitage 164-2, 1976/1993/1995.
- Ihde, Don. *Listening and Voice: Phenomenologies of Sound*. 2nd ed. Albany: State University of New York Press, 2007.
- Kramer, Jonathan. "Postmodern Concepts of Musical Time." *Indiana Theory Review* 17 (Fall 1996): 21-61.
- Kramer, Jonathan D. *The Time of Music: New Meanings, New Temporalities, New Listening Strategies*. New York: Schirmer, 1988.
- Leclair, Jacqueline. "Luciano Berio, *Sequenza VIIa* (1969/2000) Analysis." *The Double Reed*, no. 34 (2010): 97-103.
- Leclair, Jacqueline. "Sequenza VII." <http://www.beriooboesequenza.com> (accessed September 5, 2011).
- Leclair, Jacqueline. Sequenza VII. On *The Complete Sequenzas, Alternate Sequenzas and Works for Solo Instruments*. 4 CDs. Mode 161-163, 2006.
- Lester, Joel. "Notated and Heard Meter." *Perspectives of New Music* 24 (Spring-Summer 1986): 116-128.

- Lochhead, Judith. "Temporal Processes of Form: Sessions's Third Piano Sonata." *Contemporary Music Review: Time in Contemporary Musical Thought* 7, no. 2 (1993): 163-183.
- Lochhead, Judith. "The Temporal Structure of Recent Music: A Phenomenological Investigation." PhD diss., State University of New York, 1982.
- Mailman, Joshua B. "Temporal Dynamic Form in Music: Atonal, Tonal, and Other." PhD diss., University of Rochester, Eastman School of Music, 2010.
- Osmond-Smith, David. *Berio*. New York: Oxford University Press, 1991.
- Osmond-Smith, David. "Berio, Luciano." In *Grove Music Online, Oxford Music Online*. <<http://www.oxfordmusiconline.com/subscriber/article/grove/music/02815>> (accessed May 7, 2012).
- Osmond-Smith, David. *Playing on Words: a Guide to Luciano Berio's Sinfonia*. London: Royal Music Association, 1985.
- Priore, Irna. "Vestiges of Twelve-tone Practice as Compositional Process in Berio's *Sequenza I* for Solo Flute." In *Berio's Sequenzas: Essays on Performance, Composition, and Analysis*, edited by Janet Halfyard, 191-208. Burlington, VT: Ashgate, 2007.
- Redgate, Christopher. "Performing *Sequenza VII*," *Contemporary Music Review* 26 (April 2007): 219-230.
- Redgate, Christopher. *Sequenza VII. On Oboe +: Berio and Beyond*. CD. Oboe Classics, CC 2015, 2006.
- Roberts, Paul. "On Luciano Berio's *Sequenza VII* for oboe." *Mitteilungen der Paul Sacher Stiftung* 16 (March 2003): 36-41.
- Schaub, Gale. "Transformational Process, Harmonic fields, and Pitch Hierarchy in Luciano Berio's *Sequenza I* through *Sequenza X*." PhD diss., University of Southern California, 1989.
- Straus, Joseph N. *Introduction to Post-Tonal Theory*, third edition. New Jersey: Pearson Prentice Hall, 2005.
- Stoianova, Ivanka and Luciano Berio. "Luciano Berio: Chemins en Musique," *La Revue Musicale*, nos. 375-377. Paris: Editions Richard Masse, 1985.
- Toop, Richard. "Stockhausen, Karlheinz." *Grove Music Online, Oxford Music Online*, <<http://www.oxfordmusiconline.com/subscriber/article/grove/music/26808>> (accessed September 1, 2012.)
- Weisser, Bernard. "Notational Practice in Contemporary Music: A Critique of Three Compositional Models (Luciano Berio, John Cage, and Brian Ferneyhough)." PhD diss., The City University of New York, 1998.