Luciano Berio's *Sequenza III*:
From Electronic Modulation to Extended Vocal Technique

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The present essay explores the compositional continuity between Luciano Berio's use of vocal timbres in *Sequenza III* (1965), *Circles* (1960), his magnetic tape transformations of pre-recorded vocal materials in *Thema (Omaggio a Joyce)* (1958),[1] and his mixture of vocal and electronic sounds in *Visage* (1961).[2]

Thema (Omaggio a Joyce) (1958), *Visage* (1961)

Berio's research began with his study of the expressive qualities of the voice and the acoustic dimensions of language. This took place while he was still under the influence of Schönberg and Varèse. From Schönberg, Berio would take *Sprechgesang* and transforms it from an expressionist gesture into an allusive gesture featuring the onomatopoeic dimension of language and ordinary vocal emission.[3] From Varèse, Berio would take the process of reducing a text to phonetic material while combining the 'noisy,' plosive components of consonants with vowels including aspirated vocal emissions and *sforzandi*. Linguistic phonemes represented, for Berio, the new sonic materials necessary to reach the "objective physical reality"[4] of sound, that is, the acoustic dimension that unites oral language, instrumental sounds, and the sounds of daily life. This intuition coincides with Berio's analyses of James Joyce's texts, structured and organized according to a process of sonic transposition of language, in which Berio discovered a wide range of sounds and sonic associations.[5] Deriving sonic materials from Joyce's phonemes and sonic structures from linguistic combinations Berio composed these structures according to criteria which he described himself.[6] In *Omaggio a Joyce* phonemes are grouped on the basis of their acoustic affinity in a gradual sonic evolution. Vowels are organized in a harmonic

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[1] *Thema* (*Omaggio a Joyce*), work with electroacoustic elaboration on magnetic tape of Cathy Berberian's voice (Edizioni Suvini Zerboni 5993).

[2] *Visage*, work for electronic sounds and Cathy Berberian's voice on tape.

[3] See Luciano Berio, 'Du geste et de Piazza Carità', in *La musique et ses problèmes contemporains*, *Cahiers Renaud-Barrault*, n.41, (1963): 216-223, also in *Contrechamps*, n.1, (1983): 41-45.

[4] Berio, *Studio di fonologia musicale (May,1956) RAI-Radiotelevisione Italiana. Centro di produzione Radio – Milano*, in *New Music on the Radio. Experiences at the Studio di Fonologia of the RAI, Milan 1954-1959*, Veniero Rizzardi and Angela Ida De Benedictis (eds.), (Roma: Eri- Rai - Cidim, 2000), pp. 266-273: 268.

[5] Concerning the analysis of the relationship between Berio and Joyce's text, see Nicola Scaldaferri, *'Bronze by Gold', by Berio by Eco. A Journey through the Sirensong*, in *New Music on the Radio*, pp. 100-157.

[6] See Berio, *Poetry and Music - an Experience* [1958], English translation in *New Music on the Radio*, pp. 236-259.

progression from 'A' to 'U,' including diphthongs, while making continuous, gradual transitions from one formant range to another. The category of plosive consonants is structured in rapid and aperiodic sequences of unvoiced and voiced stop consonants: 'B-P', 'T-D', 'T-B','CH-G', while the group of the sibilants is organized so that the spectrum of white noise of the 'S' sound is submitted to different degrees of filtration to allow the continuous evolution of 'S' into 'F', 'F' into 'V', 'SZ' into 'ZH', etc.. These three phonetic structures – harmonic, plosive, white noise – are juxtaposed so that the one evolves into the other according to three main types of articulation, suggested by Joyce's linguistic associations:

discontinuous ╱ periodic ╱ continuous
continuous ╱ periodic ╱ discontinuous
periodic ╱ continuous ╱ discontinuous.

The dimension of continuous articulation can result both from singing a harmonic progression of vowels as well as the spectral saturation of the 'S' sound, while the dimensions of discontinuous and periodic articulation are produced both by the emission of groups of plosive consonants and by the accented articulation of vowels and syllables.

In *Omaggio a Joyce,* the use of electronic means allows for an absolute control over his compositional process, one with which Berio had previously experimented using voice and instruments in *Chamber Music*, 1953.[7] *Chamber Music* marks the beginning of Berio's use of Joyce's texts and his composing 'with phonemes.' In the second section of the work, *Monotone*, the female voice, clarinet and 'cello create a continuous harmonic spectrum, interrupted by isolated and aperiodic *pizzicati* in the harp, which function as an opposing timbre. The harp impulses are progressively fused into the timbre of the voice which, by intoning the words of Joyce's text, accentuates the plosive dimension of the sibilants and dentals. These vocal phonetic impulses, in counterpoint with the harp *pizzicati*, produce groups of periodic vocal and instrumental impulses that transform the continuous harmonic spectra into a polyphonic texture, where the two categories of sonic material – harmonic and impulsive – coexist equally. The voice, by continually alternating between sung sound and impulsive sound, is the 'polyphonic' instrument that confers sonic unity onto the whole. The relation between the two previously coexisting dimensions – harmonic and impulsive – concludes with the evolution of the harmonic material into the impulsive. This occurs by a process of "segmentation of continuous *texture*,"[8] specifically, as an effect of the percussive *jeté* attacks of the cello and the disconnected sounds of the clarinet.

Starting in 1954, at the Studio di Fonologia in Milan, Berio and Bruno Maderna deepened their understanding of the phonological aspects of language through electro-acoustic analyses and they contacted researchers in phoniatrics.[9] Berio used electronic

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7   *Chamber Music*, instrumental work for female voice, cello, clarinet and harp (Edizioni Suvini Zerboni 5053).

8   Berio, *A-Ronne*, in *Berio*, Enzo Restagno (ed.), (Torino: EDT, 1995), pp. 98-106: 106.

9   See the following documents in the Maderna Archives (at the University of Bologna; the original documents are in the Paul Sacher Stiftung, Basel): letter dated April 27th 1958, addressed to Berio by the Prof. Ettore Bocca of the Otolaryngological Clinical of the University of Milan, to which was attached Gino G. Sacerdote and Giuseppe Bellusi's lecture on the *Electroacoustic Analysis of the Consonants*, realized for the V Congress of the Italian Society of Experimental Phonetics (Catholic University, Milan, May 3-4th 1958).

instruments "to multiply and increase the transformations of vocal colors coming from one voice, to break down words and to reorder the resulting vocal material using different criteria."[10]

To understand how these electronic transformations of vocal sounds were made, let us start by examining the types of technical equipment available at the Studio; according to technical reports of the engineer, Alfredo Lietti,[11] there were different filters, a frequency translator, and amplitude and speed modulators. Speed modulators, by varying the duration of the sound envelopes, could turn a sequence of vowels into groups of impulsive sounds. The result of these transformations are vocal sounds 'distorted' in register and envelope, which combine perceptually when juxtaposed and overlapped on tape with synthesized sounds. To see an example of this type of timbre modulation, let us consider the 'laughter' gesture that appears in Berio's *Visage* and also in Maderna's *Invenzione su una voce/Dimensioni II*, 1960.[12] While 'laughter' is a gesture belonging to the expressive world of man, but if the sound of laughter is electronically manipulated by a deceleration of tape speed, it can lose its gestural dimension and reveal the series of *tocs* (impulses) of which it is made of and which make it similar to certain synthetic sounds. Thus through electronic deceleration, 'laughter' becomes the *trait d'union* between the world of acoustic sounds and that of expressive sounds. Maderna argues that timbral invention is a "function of the new" because it leads to musical innovation and the composer mentions "the use of *tremolo* strings in the first performance in Venice Monteverdi's *Orfeo*"[13] as an example.

Another electronic instrument available at the Studio di Fonologia was an "amplitude modulator which, in order to obtain a *vibrato* effect, can be set to play a frequency of only a few periods per second"[14] – i.e. a machine that physically modulates sound according to criteria associated with musical expression, such as *vibrato*, whih could emphasize the web of associations that Berio developed between the acoustic characteristics of phonemes and his musical criteria. While studying chapter XI of Joyce's *Ulysses*, Berio discovered that the onomatopoeic dimension of some words resembled musical ornaments: trill, *appoggiatura*, *acciaccatura*, *portamento, glissando, vibrato*.[15] He used the stylistic features of onomatopoeia for their acoustic function and applied them to phonetic materials to compose the degree of change necessary for the evolution of his sonic structures, as, for example, in his *Sequenza III*.

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[10]   Berio, *Poetry and Music – an Experience*, p. 248.

[11]   See Alfredo Lietti, *Impianti tecnici dello Studio di fonologia musicale*, Rai-Radio Televisione Italiana, March 16 th1956 (Studio di Fonologia della Rai di Milano Archives); also in Lietti, 'Gli impianti tecnici dello Studio di fonologia musicale di Radio Milano', *Elettronica*, n. 3, (1956): 116-121; see also Antonio Rodà, *Evoluzione dei mezzi tecnici dello Studio di fonologia musicale*, in *Lo Studio di fonologia. Un diario musicale 1954-1983*, Maria Maddalena Novati (ed.), (Milano: Ricordi, 2009), pp. 39-83.

[12]   *Invenzione su una voce/Dimensioni II*, electronic work with the voice of Cathy Berberian who performs Hans Günter Helms's phonemes.

[13]   Annotation in the notebook "Dartington - July 31st 1960" (Maderna Archives, University of Bologna).

[14]   Lietti, *Impianti tecnici dello Studio di fonologia musicale*, March 16,1956.

[15]   See Berio, *Poetry and Music - an Experience*, p. 242.

        In the generation of synthetic sounds, Berio used a 'Toc' generator, for the production of impulses, and a white noise generator that, when passed through various filters, could produce different degrees of "colored sound."[16] After consulting the documentation of the Studio di Fonologia as to how these two machines were used by Berio, it becomes evident that his model for sound synthesis was partly based on the acoustic characteristics of phonemes. For example, the electronic procedure of progressively filtering white noise, used in *Visage*, produces a spectrum corresponding to the one produced by the progressive evolution of the 'S' sound into the sequence of phonemes 'F'-'V'-'SZ,' and the effect of colored electronic sound or filtered noise, can be associated with the phonetic effect produced by an aspirated vowel filtered by the oral cavity, used cadentially as in *Sequenza III*. The musical results are synthetic sounds characterized by their phonetic quality, like the ones that we find in *Visage*. In this work Berio searches to overcome the "antinomy of the "two dimensions," the contrast between recorded (that is, electronic) music and actual performed music (instruments, singing and spoken voice)."[17] Berio considers this work, which he calls a "racconto radiofonico,"[18] to represent an important point of arrival, "important for the quantity of research that this work has implied for me."[19] After completing *Visage*, Berio takes leave of the Studio di Fonologia but in this "radio story," we can recognize several different aspects of his compositional process which we have emphasized to this point:

- elaboration of a new musical syntax that starts with sonic material derived from the acoustic spectrum of phonemes: harmonic sounds of vowels and noise sounds of consonants (periodic impulsive discontinuous noise and continuous white noise);
- composition of sonic structures in a series of transformational phases based on phonetic materials: a) from sonic uniformity to a progressive introduction of an opposing timbre; b) phases of equal coexistence of the two materials; c) incorporation of the timbral dimension of the opposing material.

        Visage is innovative by overcoming the acoustic dualism between electronic sounds and the recorded natural voice. It accomplishes this by:

- neutralization of differences of the two kinds of sound sources by seeking a physical similarity between the two; for example, white noise, when filtered, becomes colored and simulates the filtration of vowels by the throat, mouth and nose, while impulsive electronic sounds remind us, perceptually, of the impulsive qualities of accented vowels;
- a structural organization of the sound sources in which the mixed, electronic and vocal sound sources coexist on tape and interact with each other by virtue of one type of sound source evolving into the timbral dimension of the other.[20]

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[16]   See Lietti, *Impianti tecnici dello Studio di fonologia musicale*, March 16,1956.

[17]   Berio, *Poetry and Music - an Experience*, p. 254.

[18]   Berio annotates the designation "racconto radiofonico" for *Visage*, in the index book of the Studio. See Angela Ida De Benedictis, *Logbook. The 'Produzione Studio' and 'Ascolti' Registers*, in *New Music on the Radio*, pp. 292-313: 298.

[19]   Interview with Berio by Sandro Cappelletto, in *Lontananza nostalgica futura: ricordo di Luigi Nono*, Rai-Radio Programme, 1991.

[20]   Menezes speaks of "structural neutralization": see Florivaldo Menezes*, Luciano Berio et la phonologie. Une approche jakobsonienne de son œuvre*, (Frankfurt am Main: Peter Lang, 1993), p. 221.

Berio's electronic sounds are submitted to different degrees of transformation in order to attain the acoustic qualities of the vocal 'opposition timbre.' As an example of how Berio realizes this process compositionally, we will analyze the first two minutes of *Visage*, using Florivaldo Menezes' listening score[21] where the initial spectrum of electronically generated white noise in five compositional stages gradually enters the dimension of the impulsive opening vocal sounds.

Stage I (Example 1a-b). Inside a spectrum of white noise, into which the 'S' sound of the voice dissolves in electronic sound, the voice introduces in isolation the impulsive sound 'T' as an opposing timbre that signals the division between the domains of impulsive vowel sounds and synthetic spectra.

Stage II (Example 1b-d). The spectrum of electronically filtered noise – with a timbre similar to the phoneme 'SZ' – coexists with vocal impulsive sounds that accumulate (Example 1c) and progressively evolve toward the rolled 'R' (Example 1d), used as a transitional timbre between consonants and vowels.

Stage III (Example 1e-f). The voice elaborates the monosyllable 'DA' ("da" in Menezes' score, Example 1f) while evolving towards vowel phonemes which are, nonetheless, connected to the impulsive dimension of the consonant (Example 1f); meanwhile, the electronic sounds assume colors similar to the vocal phoneme 'R'.

Stage IV (Example 1f-k). The vocal sounds overlap with the colored electronic noise spectrum. From brief gestures using the harmonic spectrum of the open vowel 'A,' ("a" in the Menezes score, Example 1g) the voice evolves towards sequences of phonemes that are characterized by broad ascending and descending gestures, similar to *Sprechgesang* (Example 1h-j).

Stage V. The transformation of natural timbres from impulsive events to sounds that resemble musical gestures corresponds to the evolution of electronic sounds from spectral bands to impulsive events. Once the electronic sounds incorporate the impulsive timbre of the initial vocal phonemes (see Stage I), the conflict between electronic timbres and natural ones – now, perfectly interchangeable – is resolved (Example 1k-l).

Following Menezes' listening score, it appears evident that the recurrent return in different sections of acoustic materials from preceding sections – for example, the impulsive sound of the dental consonant 'D' – derives from "alliterative procedures," described by Berio as follows:

we have alliteration when a sound or group of sounds (often syllabic) are repeated in different contexts […]. Coherence and musical invention are often founded upon alliterative structures. Beethovenian development, for example, sometimes seems founded upon different alliterative levels.[22]

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[21]   Flo Menezes, *Un essai sur la composition verbale électronique Visage de Luciano Berio*. Modena: Mucchi Editore, Quaderni di Musica/Realtà 30* (Premio Internazionale Latina di Studi Musicali 1990), November 1993, pp. 153-155; see also Menezes 'Das "laborinthische" Verhältnis von Text und Musik bei Luciano Berio', *Musik-Konzepte*, n. 128, (2005): 23-41, and also Matteo Nanni, 'Luciano Berios Weg zur elektroakustischen Musik: Die Entstehung des Mailänder Studio di Fonologia Musicale', *Musik-Konzepte*, n. 128, (2005): 43-66.

[22]   Berio, *A-Ronne*, p. 105.

Stage **I**

a)

cadence

Stage **II**

b)

impulses cadence   cadence

c)

cadence   sequence of consonants

d)

impulse+cadence   transitional timbre
                          +cadence
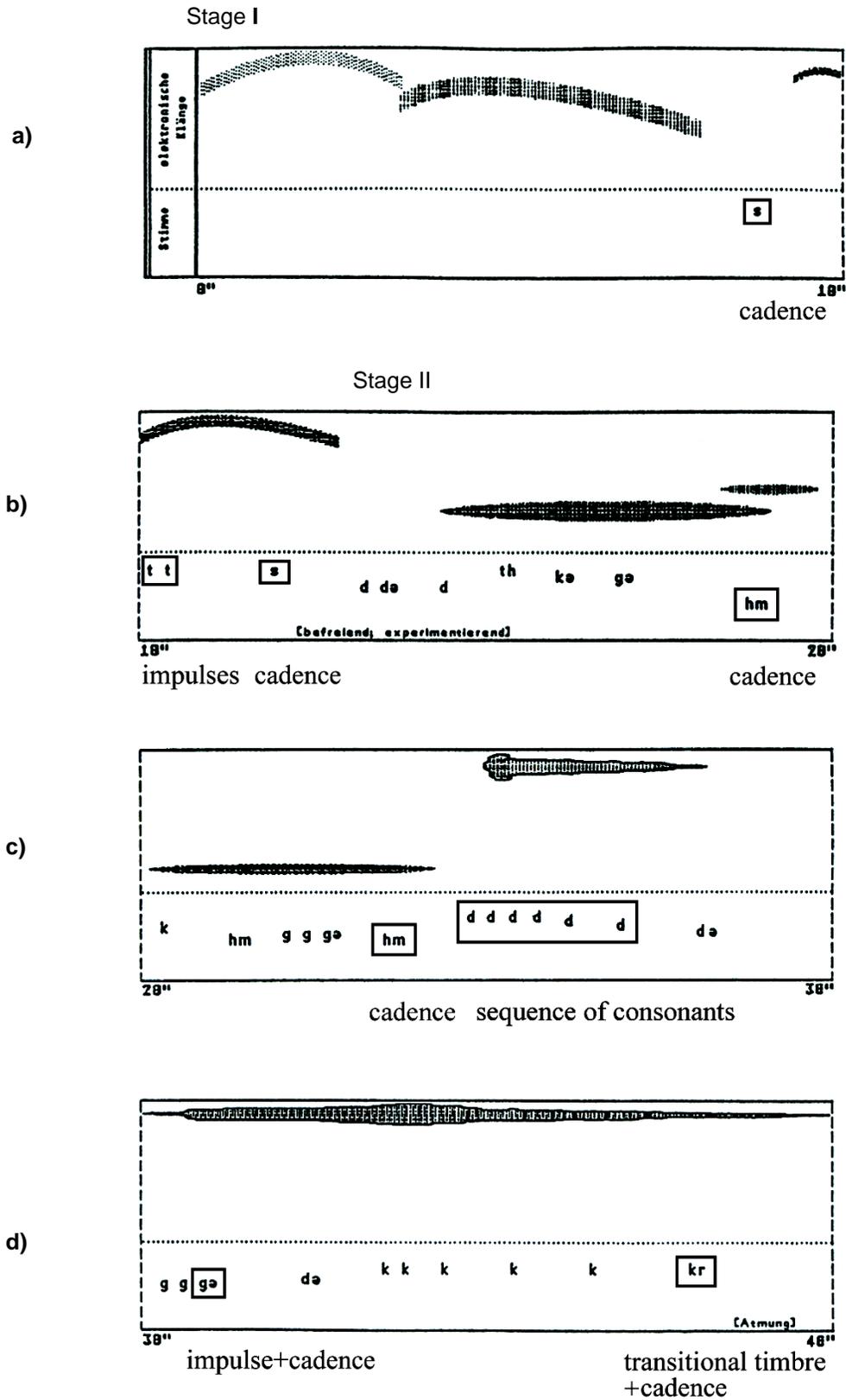
Example 1 a-l: Berio Visage 0" to 2' from Florivaldo Menezes, *Un essai sur la composition verbale electronique "Visage" de Luciano Berio* (listening score, 1989), reproduced here with the kind permission of the author.

Stage III

e)

cadence   aspirated vowel:
                                        cadence

Stage **IV**

f)

short melodic gesture   cadence
using a monosyllable   sequence of impulses

g)

h)

gesture based on   impulse+cadence
phonetic associations

Example 1: cont'd

i)

elektronische Klänge

Stimme

də   də   də   ddə   ddi^{l} di^{ll}$_{l}$ l$_{l}$ l^{l} l

[gelungen]   [fröhliche Ausatmung]

1'28"   1'38"

broad gesture   cadence

j)

di$_{\smile}$ u $_{\smile}$ n $_{\smile}$ nu ^{u} u   u   pø   pø   p po ^{o} o ^{o} o

1'38"   1'48"

impulse+cadence

Stage **V**

k)

o ^{o} o o   o   o   o   tsah   bãj   t t   d ah   a ^{a} a a$_{\smile}$ m   m $_{\smile}$

[schmerzhaft]

1'48"   1'58"

filtered sound+impulse+cadence   electronic impulses

l)

$_{l}$u   u   ts ts   d   d a $_{ah}$ a   a   a   a$_{\smile}$ f $_{\smile}$

[hinweisend]   [schmerzhaft]

1'58"   2'

Example 1: cont'd

The reference to "Beethovenian development" allows us to understand what the return of a sound, or a group of sounds, means to Berio. In *Visage*, the return of sonic events establishes a connection to the beginning of the work, from which the evolutionary process began, and it creates a propelling force toward further development. Also, the return of sonic events in the form of a *cadence*, that is, white or 'colored' noises which are sometimes preceded by impulsive sounds, re-establishes a connection with the spectral band of white noise that began the work, while recreating the evolutionary process of the whole work starting from a state of sonic saturation or indistinct timbre. This *cadence*, as we will see, also articulates some of the sections of *Sequenza III*: it follows laws of linguistic syntax taken from Joyce's *Ulysses* and it corresponds to "the disappearance of the discourse of the final sibilance of the 'S' sound"[23] and to its regeneration into new linguistic/sonic structures.

Circles (1960)

Research with electronic instruments represented for Berio a transitional compositional phase that would be finalized by the creation of a new musical language which he would be able "to realize also within the instrumental music".[24] Before *Visage,* Berio returned to instrumental music with *Circles* (1960), for female voice (Cathy Berberian), harp and two percussionists, to which he had applied compositional procedures of *Omaggio a Joyce*. The evolution of a spectral band of white noise into new configurations, or sequences of discontinuous and periodic impulses in *Circles* is obtained via the interaction between voice and instruments. The gradualness of the transformation from white noise to impulses is assured due to the variety of timbres produced by the percussion instruments which function timbrally as a kind of 'glue,' between the continuous sonic spectra of the 'S' sounds and the *pizzicato* timbres of the harp.

Berio's knowledge of physical acoustics deepened with his analyses of sonic spectra. This is reflected in this work where the combination of vocal 'S' sounds with sounds of sand blocks and maracas is not dictated by simple psycho-acoustic similarities of timbre among the three instruments; what is more important is the similar quality of their white noise spectra, due especially to the reinforcement of frequencies in the range between 4.000 and 12.000 Hz.[25] The result is a continuous spectral band of sound from which the impulsive harp *pizzicati* are isolated. The opposing harp timbre thus introduces a transformational

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[23]   Berio, *Homage to Joyce. Documentary Evidence on the Onomatopoeic Quality of Poetic Language*, in *New Music on the Radio*, pp. 340-355: 352.

[24]   Letter addressed by Berio to Giulio Razzi, Gino Castelnuovo, Mario Bevilacqua, dated Milan, 25th July, 1956, in Nicola Scaldaferri, 'Documenti inediti sullo Studio di fonologia musicale della Rai di Milano', *Musica/Realtà*, n. 45 (1994): 151-166: 161.

[25]   See Ramazzotti, *La fusione dei timbri nella musica vocale del Novecento*, PhD thesis of the University of Bologna (Department of Music and Spectacle), 2000-2001. For the analysis of Berio's sounds, the recording WERGO WER 6021-2, 1967/1991 has been used, performers: Cathy Berberian (voice), Francis Pierre (harp), Jean Pierre Drouet and Jean Claude Casadesus (percussion); recording Südwest-Tonstudio Jansen, Stuttgart.

continuous spectrum of white noise

progressive overlap of aperiodic impulses

periodic impulses

Example 2: Berio, *Circles,* p. 7

aperiodic impulse element to which the continuous spectral band evolves by way of a transitional, periodic phase. The entrance of the white noise of the Mexican beans and claves then coexist with a series of impulses, producing an acoustic discontinuity. The ultimate evolution toward periodicity occurs via the entrance of the wood blocks and temple blocks which produce a sequence of periodic impulses when mixed with the harp.

Another compositional procedure in *Circles,* taken from Berio's electronic works, is the evolution toward discontinuity of a regular sequence of consonantal impulses. Berio and Maderna had electronically obtained this effect by accelerating a signal and sending it into a loop at regular intervals of time.[26] In *Circles,* the sequence of periodic

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[26]   See Berio, *Poetry and Music – an Experience*, pp. 250-252.

impulses is performed by Catherine Berberian,[27] who enters articulating her 'TKTKTKTKTK' with rhythmic stresses in perfect synchrony with the bongos and tablas. In the transformational phase from periodic to aperiodic sound, Berberian's voice is replaced by the voices of the percussionists who, while playing two note chords on marimba and xylophone, synchronously vocalize aperiodic impulses on open syllables. The resulting spectra evolve from periodic towards aperiodic sound against a constant, regular background of *pppp* harp *tremolo*, which has the same function as the 'R' *roulée* of *Visage* - that is, to prepare the transition, in this case, from periodic to discontinuous sound.

Example 2: Berio, *Circles*, p. 28

Sequenza III (1965)

With *Sequenza III,* Berio was able to compose a work which synthesized all of his previous compositional methods involved in the resolution of sonic dichotomies. He was able to realize with the sound of the natural voice the same sonic processes that he had obtained in *Omaggio a Joyce* by electronic modulation of the voice, in *Visage* by sounds of synthesis, and in *Circles* by sounds of percussion instruments.

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[27]   Concerning Berberian's contributions to the creation of these pieces and her importance in the development of extended vocal technique in and after the recording studio, see David Osmond-Smith, 'The Tenth Oscillator: The Work of Cathy Berberian 1958–1966,' *Tempo*, n. 58, (2004): 2-13.

As phonetic materials, Berio uses words, fragments of words, syllables, consonants and vowels taken from Markus Kutter's 'modular text.' This text, composed of small permutable sentences,[28] is particularly appropriate for undergoing operations of syntactic disintegration and reintegration in its sonic syntax.[29] The composer applies to the phonetic materials different techniques of expression - *portamento*, *acciaccatura*, trill, accented sounds, *arpeggio* – and gives different ways of speaking and singing, that modulate the acoustic qualities of phonemes.[30] Agogic and intensity indications are replaced by emotional suggestions – "tense," "serene," "frantic," "coy," "desperate," "joyful," etc. – which also influence the physical dimensions of sound: for example, the different forms of 'laughter' – joyful, desperate, tense – which bring different degrees of modulation to the sonic process. In *Sequenza III*, as in Berio's electronic works, we can recognize two categories of material: the impulsive (discontinuous/periodic) and the harmonic (continuous). Filtered white noise is an intermediate material between impulsive sound, with which it shares the quality of noise, and harmonic sonority, to which it is associable as continuous sound. In the category of impulsive sound, there are the isolated impulses that are produced by phonemes and by accented syllables and there are sequences of impulsive sounds which are derived from processes of phonetic association and 'laughter.' In the category of harmonic sounds, there are sounds sung on words or on vowels, and *arpeggio*. These two types of material – the impulsive and the harmonic - undergo different degrees of modulation through the use of different performance techniques: finger snapping, mouth clicks, coughing, accented attacks, abrupt stops, and various techniques of expression – *acciaccatura*, *portamento* and *vibrato*. In the category of *vibrato,* I have inserted all those techniques that bring discontinuity to the harmonic envelope, that is trill, *tremolo*, and the action of hand covering the mouth.

The sonic materials have been translated in symbols, according to the following scheme:

>	isolated impulse
◆	group of impulses
L.	'laughter'
O~~~~	harmonic sounds
A.	*Arpeggio*
Ø	filtered sound

[28]   The complete modular text used in *Sequenza III* is the following:

give me/ a few words/ for a woman / to sing / a truth / allowing us / to built a house / without worrying/ before night comes.

[29]   For an analysis of the use of Kutter's text and of the psycholinguistics connotations see: Istvan Anhalt, *Berio's Sequenza III: A Portrait*, in *Alternative Voices: Essays on Contemporary Vocal and Choral Composition*, (Toronto: University of Toronto Press, 1985), pp. 25-40; David Osmond-Smith, 'Joyce, Berio et l'art de l'explosion,' *Contrechamps*, n.1, (1983): 83-89, and *Berio*, (Oxford-New York: Oxford University Press, 1991), pp. 64-67; Jean-François Lyotard, *"A few words to sing,"* in *Music/ideology: Resisting The Aesthetic*, Adam Krims (ed.), (Amsterdam: G+B Arts International, 1998), pp. 15-36; Joke Dame, *Voices within the Voice: Geno-text and Pheno-text in Berio's "Sequenza III,"* in *Music/ideology: Resisting The Aesthetic*, pp. 233-246. See also Rossana Dalmonte (ed.), *Berio. Intervista sulla musica*, (Roma: GLF Editori Laterza, 2007).

[30]   See Patti Yvonne Edwards, *Luciano Berio's "Sequenza III" : The Use of Vocal Gesture and The Genre of the Mad Scene*, (Ann Arbor, Michigan: UMI Dissertation Services, 2007).

Performance and expressive techniques that modulate the physical emission of the sounds have been marked with signs located above the symbols related to the sonic materials:

>	snapping fingers, mouth clicks, cough, accented attack, abrupt stop
⨝	*Acciaccatura*
⟩	*Portamento*
vib.	trill, *tremolo*, hand over mouth

Sectional divisions have been made according to the following criteria:

- transformation of the technique of physical emission and of the expressive character of the sonic structures;
- presence of cadential figures;
- consideration of 'caesura' zones (rests).

Section I: from 0" to pause at 1'13"

The beginning is characterized by the exposition of impulsive material that is structured into isolated groups of syllabic associations quickly and periodically articulated. Single impulsive sounds at 8" are progressively absorbed into harmonic material. Harmonic material, produced by singing on a cycle of vowels, is presented for the first time at 12" with impulsive sound incorporated within it as it decays. The evolutionary process toward the coexistence of continuous and discontinuous sound continues between 23" and 33" via the modulation of the harmonic envelope by the filtering vocal of sounds with the hand, and it ends between 43" and 1'01" with the introduction of the *acciaccatura* in the attack part of the harmonic sound, the *tremolo* in the envelope, and accent in the decay part of the sound. The sonic structures are composed in a linear progression that moves toward a polyphonic sound complex, where the two materials - harmonic and impulsive - coexist equally (see the preceding analysis of the compositional procedures of *Chamber Music*).

Simultaneous to the linear progression is a 'cyclical' process, based on the return of initial events, following the formal structure of *Visage*. The return of the group of impulsive sounds and the harmonic sequences not only creates a link with the beginning of the work, but it also gives a push towards further developments: the group of impulsive sounds evolves towards the gesture of 'laughter' and the harmonic sequences evolve towards the stylistic figure of *arpeggio*. The recurrence between 1'07" and 1'11" of these gestures – 'laughter' and *arpeggio* – gives a conclusive character to the sonic movement which becomes a cadence in aspirated vowel sounds. According to Berio, 'laughter' and *arpeggio* – gestures characterized by a marked melodic profile – are rhetorical figures of cadential zones, which are already found in *Monotone*. These gestures are followed by a *cadence* in filtered white noise or aspirated vowel sounds, which has, for Berio, the same meaning as that of the *cadence* in sibilant noise for Joyce: a cadence in which the discourse fades away - a neutral material yet potentially rich for development.

Section I
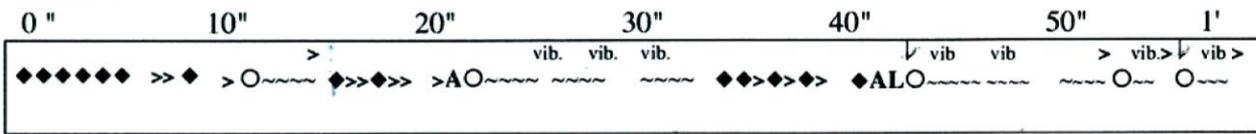
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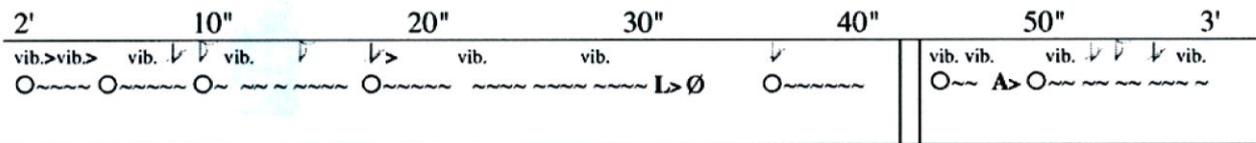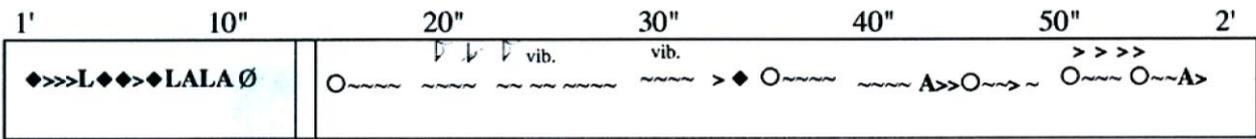
Section III
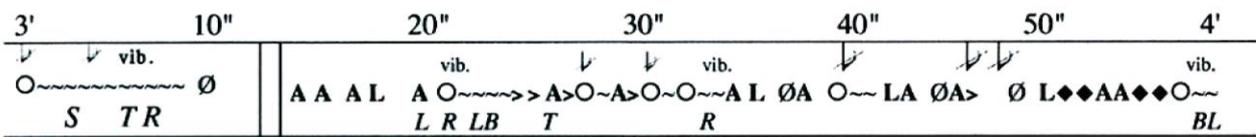
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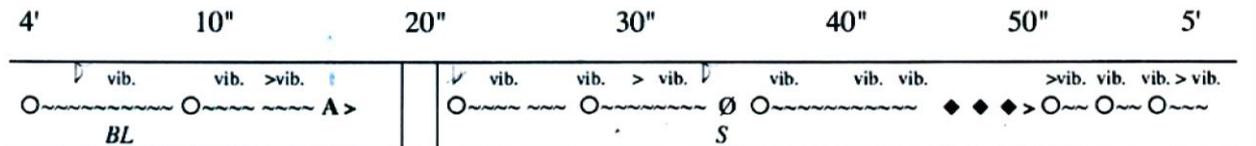
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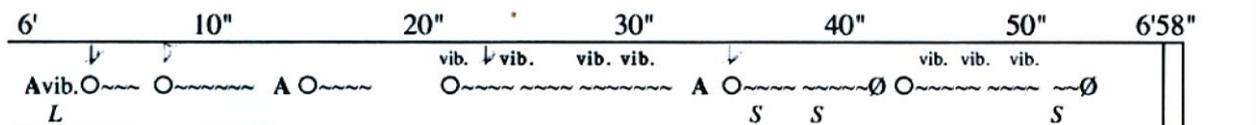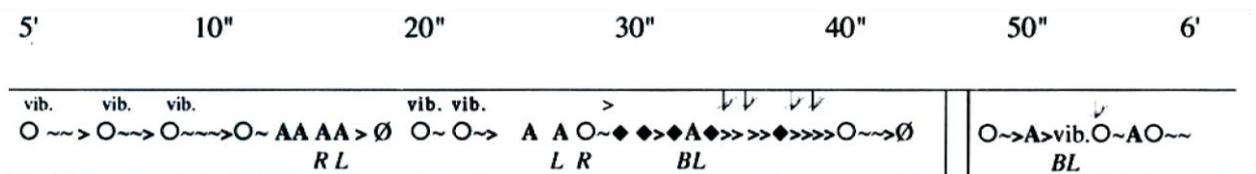
Example 4: Berio *Sequenza III*, Listening Score

The chronometric references have been taken from the recording by Philips 426662-2, Philips Classics Productions, 1970 (recording: London, 4/1969). It is 6'58" long and it does not coincide with the score (Universal Edition 13723), or the first recording (Wergo, 1967) which indicate 8'40". This recording was selected because its scheme of durations represents the essential electronic concept of the work.

Section II: from 1'16" to pause at 2'43"

      The harmonic material assumes the style of operatic *bel canto* and, from the acoustic point of view, it absorbs in its envelope the impulsive dimension of the other material; except for occasional returns, the impulsive material loses its monodic profile so as to coexist with the harmonic material in the 'polyphony' of the vocal *a solo*. In the first sonic structure, up to 1'33", *portamento*, *acciaccatura* and *vibrato* effects (the latter produced by the hand very rapidly tapping over the mouth) interrupt the harmonic envelope. In the second structure, between 1'48" and 1'55", a process of breaking up of the harmonic continuity occurs through a counterpoint between mouth clicks, finger snapping and accented attacks of the voice. This resolves at 1'55" in the coincidence of the impulsive sounds, as also in *Circles*, where the articulation of 'TK' in the voice is perfectly synchronous with the percussion sounds. At 1'59", the process of segmentation ends with *arpeggio* (1'58") followed by impulsive sound, another cadential character, emphasized earlier in *Visage*. The evolutionary process toward the polyphony of opposites ends between 2' and 2'31", where *tremolo*, *acciaccatura*, *portamento* and accent are completely integrated into the attack, envelope, and decay of the harmonic sound. At 2'31", the cadential figures, "laughter" and mouth clicks, return, followed by the filtered vowel sounds and the return of harmonic sound with *acciaccatura*, which opens up the sonic process into a zone of transition.

Transitional section: from 2'44" to pause at 3'12"

      This is a transitional zone in the sense that it reuses materials that have the same acoustic and stylistic character as the preceding sections, and it announces the phonetic components that will characterize the developments of the sections that follow: the sibilant exposition (3'03") that returns in Section IV (4'35"), and the *tremolo* on 'T' and 'R' (3'05"-06"), which introduces the *arpeggio* on 'T' (at 3'26") and the *tremolo* on 'R' (at 3'22" and 3'33") of Section III.

Section III: from 3'14" to pause at 4'19"

      In this section, the two opposing sonic materials are integrated by their both taking on the melodic profile of an *arpeggio* with strong elements of parody. The *arpeggio*, which, in the preceding sections, had a harmonic quality, now takes on the impulsive character in a sequence of 'laughter' sounds, while, on the other hand, the harmonic material has now taken on the *arpeggio* melodic profile and in its envelope incorporates *tremoli* on 'R'-'L'-'B' and *acciaccatura* in its attack phase. This section, in its elevated density of events and advanced degree of transformation of materials, shows characteristics of a development section, where the return of impulsive sound groups and the sung vowels sounds of Section I serve, as in Beethoven's development sections, to give formal coherence to Berio's invention. The repetitions of cadential figures in *arpeggio* and 'laughter,' followed by *cadences* in aspirated vowel sounds (3'38" - 3'46" - 3'49"), are functional in the resolution of the active sonic development.

Section IV: from 4'21" to pause at 5'48"

In this section, the two materials find 'reconciliation' via their use of the trill, which is a variant of the *tremolo* of the preceding section. The trill characterizes the attack of the harmonic sounds at 4'28" and also produces at 4'47" impulsive sound groups.

Starting from 5'13", the forward evolution of the work is stopped, resulting in the return of the events of Section III: the impulsive sound groups of the *arpeggio* and the intoned sound groups in *arpeggio* are interrupted by *tremoli* on the consonant 'R.' Further involution is marked by the return of the group of accented syllables (5'29"), *acciaccatura* (5'35"), and the sung vowel (5'41"), sounds which characterized Section I.The *cadence* on the aspirated vowel 'A' refers back to the concluding *cadence* of Section I.

V section: 5'49" to pause at 6'58"

This section has the character of a return because juxtaposes the events of preceding sections according to non-evolutionary, purely summational criteria:

- the *arpeggio* in the impulsive dimension of 'laughter' of Section III (from 5'51" to 6'01") and the harmonic sound spectra of section I (6'08");

- the *tremolo* on the consonant of Section III (5'52" and 6'02");

- the *tremolo* in the envelope phase (6'22" to 6'32") and the *acciaccatura* in the attack phase of the harmonic sound (5'54" and 6'03") that characterized Section I;

- the sibilant *cadence* that refers back to the transition section and to Section IV.

This analysis has emphasized sonic structures that undergo evolutionary procedures, a compositional method that began in Berio's music with *Chamber Music*, as well as, 'cyclical' procedures, already recognizable in *Visage*. In *Sequenza III* the linear/evolutionary and cyclical dynamisms of these processes produce a form that reconciles both these forces by way of an organization of sections reminiscent of the exposition, development, and return of the classical *sonata* form. Berio thus finds a way to reconcile the physical reality of sound with musical stylistic features, just as the *portamento* of the Baroque tradition and the *bel canto* of the operatic tradition were ways to reconcile musical style with the acoustic reality of speech. According to the same compositional idea, Berio finds musical forms derived from the evolution of sound and reconciles them with the forms of the classical tradition.