

Chapter 1

Rhythm and Timing in the Two Versions of Berio's *Sequenza I* for Flute Solo: Psychological and Musical Differences in Performance

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The music leaps off the page in a way that the less conventional Suvini Zerboni score does not suggest. Yet there is a price to be paid. The fluid spring of the original resolves into simpler relationships, often suggesting an underlying quaver or crotchet pulse for a few seconds. The conventional use of beams to join smaller rhythmic units into quaver and crotchet groups encourages a very different view of structural priorities within the phrase. It would be interesting to hear performances from the two notations side by side: I think one could tell them apart.¹

The above quotation suggests that the notational differences between the two editions of Luciano Berio's *Sequenza I* for flute solo (henceforth called *1958* and *1992*) might suggest radically different interpretations. The first edition was notated proportionally – with pitches placed on a 'temporal grid' delineated by hash marks – while the later one translates these proportions into conventional rhythmic notation. (See Exx. 1.1 and 1.2.) Our initial hypothesis was that the new notation results in significant differences in performances. To test this, we did a computer analysis of precise timings from eleven professional recordings of the piece, which we have divided into two groups: those playing from the old edition, and those either playing from the new edition or 'informed' by the new edition.²

¹ David Osmond-Smith, 'Only Connect...', *The Musical Times* 134/1800 (February 1993): 80.

² We have grouped the recordings in this way because of the small number (one to be exact) of performers that use *1992*. The reason for the imbalance of old versus new is that (from what we have ascertained), not many flutists yet use the new edition and many of the established professionals prefer the old. In one case, the performer (Anna Garzuly) is clearly aware of the new edition; she states in her liner notes: 'The performance on the CD follows the first, 1958 edition ... The alternative notation allows the player a certain freedom and

The discussion consists of four parts: (1) background, which includes a history of the notation of *Sequenza I* and a short summary of other writings that compare old and new editions; (2) a discussion of the real and psychological differences in playing from the two different scores, supported by interviews with professional flutists; (3) a description of our method; and (4) results, including presentation of the performance data and a summary of the rhythmic and interpretive differences among performances.

The primary aim of our study is to analyze professional recordings in order to provide insights into the performance tradition of *Sequenza I* and de-mystify the real musical differences between the ‘free’ and ‘controlled’ notational systems of the two editions.

Background: the two versions of *Sequenza I*

The history of Berio’s notational decisions for this piece is quite interesting, and has been described by Benedict Weisser.³ Evidently, Berio’s initial intention was to use precise, metered notation for 1958: ‘He originally wrote it in exceptionally fine detail (almost like Ferneyhough in the original form), but Gazzelloni could not handle it, so Berio decided to use proportional notation.’⁴ This suggests that the proportional notation came about, at least in part, as a solution to a problem. Berio had this to say about the issue of notation in an interview with Weisser:

Usually, I’m not concerned with notation itself. When I’m concerned, that means there’s a problem. The issue of notation comes out, at least in my own musical perspective, when there is a dilemma, when there is a problem to be solved. And that pushes me to find solutions that maybe I was never pushed to find before.⁵

Whether he intended it or not, Berio’s notation of *Sequenza I* became the focus of attention for both musicians and literary theorists who were proponents of the

flexibility in the frame of strictly notated disciplin [sic].’ Anna Garzuly, *Flute Visions of the 20th Century*, Hungaroton Classic, 1996, liner notes. When we say the flutist is ‘informed’ by the new edition, we mean that s/he has studied it and has incorporated some of the information from 1992 while still reading from 1958. When we did not have direct documentation (either in the liner notes or through correspondence with the performers), we determined which edition was used from isolated instances in which notes and/or register were changed in the new edition.

³ Benedict Weisser, *Notational Practice in Contemporary Music: A Critique of Three Compositional Models (Luciano Berio, John Cage and Brian Ferneyhough)* (Ph.D. Dissertation, CUNY, 1998), pp. 37–76.

⁴ *Ibid.*, p. 38. This quote is from a letter to Weisser from Nicholas Hopkins (Berio’s former musical assistant); according to Hopkins, these sketches now reside in the Paul Sacher Stiftung in Basel.

⁵ *Ibid.*, p. 240.

opera aperta, or ‘the open work’. Umberto Eco lists the *Sequenza* alongside Karlheinz Stockhausen’s *Klavierstück XI* (1956) and other works of the period that offered a multiplicity of interpretations, based on performers’ choices.⁶ Thomas Gartmann considers this inclusion of Berio’s work in this list as a ‘well-known misunderstanding’ [ein fruchtbares Missverständnis] of Berio’s intent.⁷ Since its premiere by Gazzelloni in 1958, *Sequenza I* has become one of the three most important twentieth-century solo pieces in the flute repertoire – the others being Debussy’s *Syrinx* (1913) and Varèse’s *Density 21.5* (1936) – and is probably the most cited example of proportional notation. As Weisser states, ‘... it is one of the works that led to a pedagogy of new music.’⁸

As early as 1966, Berio expressed dissatisfaction with the way flutists performed the piece. That year Berio wrote a letter to flutist Aurèle Nicolet just as the flutist was preparing a recording of the piece.⁹ The letter includes a renotation, in conventional rhythmic notation, of the first phrase of the piece and the first phrase of the first complete return of the prime row.¹⁰ The following is the main portion of that letter:

Dear Aurèle, ... concerning the *Sequenza*, I would like to thank you first for your recording, which is very virtuosissimo and very wonderful. But permit me to make some comments. This piece has already been recorded several times, unfortunately always in an imprecise manner. This time I have the chance to intervene before the record is pressed and I have the privilege to get a recording by an artist as good as you; I would not want to miss the opportunity to receive an interpretation that could serve as a model and as a reference for other performers. In your recording, there is a misunderstanding: it is with regard to the proportions of time and speeds. It is not so much the question of slower or faster speed, but rather – once the speed is selected – the proportions of the durations. It follows as a consequence that one must also choose a tempo (I have MM 70 indicated, that should be interpreted with a little flexibility), which permits one to respect these proportional relations. These proportions will always be a little approximate to be sure because of the adopted notation. But I only selected this ‘proportional’ notation in order to allow a certain accommodation for the interpreter in

⁶ Umberto Eco, ‘L’opera in movimento e la coscienza dell’epoca’, *Icontri musicali* 3 (1959): 32-54. Translated by Anna Cancogni as *The Open Work* (Cambridge, 1989). Francesca Magnani situates the *Sequenza* in the context of musical and literary explorations of the 1950s. See ‘La *Sequenza I* de Berio dans les poétiques musicales des années 50’, *Analyse musicale* 74 (1989): 74–81.

⁷ Thomas Gartmann, ‘Das neu erschlossene Kunstwerk: Luciano Berios Überarbeitungen der *Sequenza*’, in Kathrin Eberl and Wolfgang Ruf (eds), *Musikkonzepte - Konzepte der Musikwissenschaft. Bericht über den Internationalen Kongreß der Gesellschaft für Musikforschung Halle (Saale) 1998*, (Kassel: Bärenreiter, 2001), vol. 2, p. 611.

⁸ Weisser, *Notational Practice in Contemporary Music*, p. 48.

⁹ Written from Watertown, Mass., 14 October 1966.

¹⁰ For a discussion of the row and its treatment, including this important structural marker, see Chapter 11 in this volume.

the extremely dense and quick passages. Each flutist can therefore adapt the degree of speed, but always keeping the indicated proportions. For example, the beginning of the piece can be envisioned as follows: ...¹¹

We have quoted a large part of this letter because it provides much insight into Berio's intentions. We can conclude that absolute tempo was not as important to him as maintaining a consistency in rhythmic proportions (a word he underlines twice in his letter).

Berio's notation in the Nicolet letter is shown as Ex. 1.3.¹² This version shares features of both editions. The fact that it fits into a 2/8 metric grid makes it closer to 1958, since there is a one-to-one correspondence between hash marks and beats, while Ex. 1.2 adds a demisemiquaver to the first two beats (more about this below). At the note-to-note level, the first bar of Ex. 1.3 is more similar to Ex. 1.2, while bar two of Ex. 1.3 is more similar to Ex. 1.1. The three versions are quite similar in the middle, but Ex. 1.3 greatly extends the sustained A at the end.

Several times between the letter to Nicolet and the ultimate release of 1992, Berio expressed his dissatisfaction with the way flutists performed *Sequenza I*; one early instance is in a private conversation with Robert Dick at IRCAM in 1978.¹³ In an interview after the release of 1992, Berio explained:

At the time I wrote *Sequenza I*, in 1958, I considered the piece so difficult for the instrument that I didn't want to impose on the player specific rhythmical patterns. I wanted the player to wear the music as a dress, not as a straitjacket. But as a result, even

¹¹ This letter and the musical examples from the letter are quoted in Thomas Gartmann, 'Das neu erschlossene Offene Kunstwerk'. We want to express thanks to Gartmann for sending us copies of his articles and a copy of Berio's letter to Nicolet. [Cher Aurèle, ... à propos de *Sequenza*, je te remercie, avant tout, de ton enregistrement qui est très virtuosissimo et très étonnant. Mais permet moi de faire quelque remarque. Cette pièce a été enregistrée déjà plusieurs fois et, malheureusement, toujours d'une façon assez imprécise. Cette fois que j'ai la chance d'intervenir avant que le disque soit imprimé et j'ai le privilège d'avoir un enregistrement fait par un artiste comme toi, je ne veux pas perdre l'occasion d'avoir une exécution qui puisse servir de modèle et de référence à des autres exécutants. Dans ton enregistrement il y a un malentendu: c'est au regard des proportions des temps et des vitesses. Ce n'est pas donc tellement question d'un tempo plus ou moins rapide mais - une fois choisi le tempo - des proportions des durées. Il arrive, comme conséquence, qu'il faut aussi choisir un tempo (j'ai indiqué MM 70, qu'il faut interpréter d'une façon un peu flexible) qui permet de respecter ces proportions de durée. C'est vrai que ces proportions, à cause du type de notation adopté, seront toujours un peu approximatives. Mais j'ai choisi cette notation „proportionnelle“ seulement pour permettre un certain accommodement de la part de l'interprète, dans les passages extrêmement denses et rapides. Chaque flutiste peut donc adapter le degré de vitesse, mais toujours gardant les proportions indiqués. Pour exemple, le commencement de la pièce peut être envisagé comme ça: ...]

¹² We typeset this example for clarity; our copy of the original hand-written example was too blurred to reproduce here.

¹³ Email from Robert Dick to us in response to our questionnaire, 3 November 2004.

good performers were taking liberties that didn't make any sense, taking the spatial notation almost as a pretext for improvisation. Certainly some sort of flexibility is part of the conception of the work. But the overall speed, the high amount of register shifts, the fact that all parameters are constantly under pressure, will automatically bring a feeling of instability, an openness which is part of the expressive quality of the work – a kind of 'work-in-progress' character if you want.¹⁴

In preparing the revised version, Berio told Weisser that he made use of the original, 'pre-proportional' sketches from 1958:

[Berio] copied the old version in pencil, then modified all the rhythms in order to simplify them. This process consisted of regularizing or 'rounding off' the rhythms so they would fit into rational meter. Berio describes it in a wonderfully understated, pithy manner: 'I eliminated some excess of complexity.'¹⁵

Although it is clear that Berio authorized this new edition, it was, until now, less clear how closely he was involved in actually creating it. According to Heinz Stolba, who is from the editorial house for Universal Editions, the 'transcription to "conventional" notation' was done by Paul Roberts, who was Berio's assistant.¹⁶ We contacted Paul Roberts, who gave us his first-hand account of the history of the piece, along with many interesting insights into Berio's use of proportional notation in general:

The truth is that Berio originally composed the flute *Sequenza* in standard notation back in 1958. It was written using very strict serial rhythms, and was barred in 2/8 from start to end. The notation was very similar to his other works published by Suvini Zerboni, for example the *Quartetto* (1956), or *Serenata I* (1957). (It would be of no surprise to learn that Gazzelloni actually gave the first performance in Darmstadt from this original.) This is the moment when proportional notation was 'born' because Berio rightly felt that the original notation was too awkward. He therefore proceeded to transform this *Sequenza* visually into the version that we all now know. Unfortunately, over the years, he became increasingly disappointed with how flute players approached this notation which is by no means as free as it seems. (This was the case, in effect, with all his proportionally notated pieces.) ... M^o Berio asked me to process the original version on the computer (I worked from his personal original transparencies). With this in hand he 'corrected' his own notation, smoothing the original rhythms down. In a sense, he did in 1991 what he perhaps should have done back in 1958. There is no question that I began from a renotated version. The Suvini Zerboni publication is in reality a renotated version of the original.

¹⁴ Theo Muller, "'Music is not a solitary act": conversation with Luciano Berio', *Tempo* 199 (1997): 19.

¹⁵ Weisser, p. 49; the quote is from an interview Weisser conducted with Berio.

¹⁶ Email message from Heinz Stolba to Irna Priore, 31 August 2004 (forwarded on the same day). We wish to thank Priore for her help with this and for sharing other materials with us.

Just for the record, as far as I know, there is not a single piece of Berio's that began life in proportional notation. This may disappoint some, but even the harp *Sequenza* was originally composed like the flute *Sequenza*.¹⁷

Differences: Real and Psychological

At first sight, it appears that 1992 is more precise than 1958, but is it really? The fermata areas are certainly more controlled: all fermatas (and several long notes without fermatas) in 1958, are assigned a specific length in seconds in 1992. But the translation of the spaces between hash marks to crotchets (where the hash mark in 1958 is equivalent to the crotchet in 1992), is far from precise. The differences in notes, register, dynamics and articulation are minor compared to the profound differences in rhythm and rhythmic grouping.¹⁸ In many instances, the proportional spacing of 1958 is translated into rhythms that exaggerate the proportional distances between notes or even contradict them. Furthermore, small values are sometimes added (or less frequently, subtracted) from the beat, which affects the tempo and the original proportions. Even at the start, 1992 begins with two 'long' beats of a crotchet plus a semiquaver (see brackets below Ex. 1.2), which effectively slows down the audible pulse of 70MM by a fifth, to 56MM.¹⁹

Example 1.1 The 1958 edition, phrase 1



Example 1.2 The 1992 edition, phrase 1

¹⁷ Email message from Paul Roberts to Janet Halfyard, 5 November 2005; forwarded to us 7 November 2005; revised slightly by Roberts and sent 12 December 2005. We wish to thank him for his enlightening response.

¹⁸ For a detailed comparison of the two editions, see Cynthia Folio, 'Luciano Berio's Revision of *Sequenza for Flute*: A New Look and a New Sound?' *The Flutist Quarterly*, 21/2 (1995-6): 43-50.

¹⁹ Weisser discusses these 'added values' extensively and transcribes the new edition using changing meters: most of the piece is in 2/8; the bars with an extra demisemiquaver are transcribed as 5/16.

Example 1.3 Typesetting of Berio's handwritten example from a letter to Nicolet (1966)



Examples 1.4–1.6 illustrate just three of many examples where the grouping of notes is changed such that a note (or group of notes) shifts relative to the hash mark (1958) or to the crotchet pulse (1992). The G₄ in Ex. 1.4a comes right before a hash mark, but occurs on a beat in Ex. 1.4b. The flurry of fluttered notes in Ex. 1.5a is grouped completely differently in Ex. 1.5b: the B^b₆ begins slightly after the hash mark in 5a, but on the beat in 5b; the notes within the flourish begin close together, but get farther apart gradually in 5a, but they become suddenly slower in 5b, beginning with the G₅, which now occurs on the beat. Ex. 1.6a is six and a half beats long from the tempo change to the final C[#]₄, but the same span in Ex. 1.6b is seven and a half beats long. Some implied accents are also shifted in this example: the C₆ near the end occurs immediately after a hash mark in 6a, but is in the middle of a beat in 6b; the D₄ that follows soon after is in between two hash marks in 6a but begins a new beat in 6b.

Example 1.4 Hash marks 55–56

a. 1958 edition



b. 1992 edition



Example 1.5 Hash marks 145–46

a. 1958 edition



b. 1992 edition



Example 1.6 Hash marks 243–50 (at the first tempo change)**a. 1958 edition**

60 M.M.

pp *mf* *sf* *p < mf* *p < mf* *ppp*

b. 1992 edition

$\text{♩} = 60$

pp *mf* *pp* *ff* *p < mf* *p < mf* *ppp*

Paul Nauert suggests that decisions made in the renotation might have been influenced by three possible musical aims: to widen the range of degrees of association among various musical figures (for example, by assigning precise rhythms to similar motifs); to articulate the piece's formal design; and to maintain a high degree of rhythmic irregularity (by the addition and subtraction of small values).²⁰

We tend to agree with Nauert's view that 1992 is 'an interpretation – "a performance," if you will – of the original 1958 score'.²¹ Evidently, this is consonant with Berio's view, since he admitted to John Heiss that the new edition is just one possible interpretation of the old one.²² This idea finds support in the history of the piece when one observes that Berio renotated the first phrase in several different ways. It is interesting to note that Samuel Baron required his students to renotate the piece and that he created his own version in 6/8 meter.²³

As a part of our study, we sent out a questionnaire and/or interviewed professional flutists, many of whom have 'lived' with this piece for many years.²⁴

²⁰ Paul Nauert, 'Berio's Re-Notation of Sequenza I: Representations of Surface and Structure in Nonmetric Music' (Paper presented at MTSNYS conference, April 1996). Our thanks to Nauert for sending us his paper.

²¹ Ibid.

²² Telephone conversation with John Heiss, 7 June 2005.

²³ Telephone conversation with Erich Graf (former student of Samuel Baron), 1 May 2005. It is interesting to note that when Harvey Sollberger studied with Baron, Sollberger argued passionately against re-notating it; he told Baron it would be a desecration (telephone conversation with Sollberger, 3 July 2005).

²⁴ We wish to thank Robert Dick, Roberto Fabbriciani, Helen Bledsoe, Claudia Anderson, Tara O'Connor, Sharon Bezaly, Erich Graf, John Heiss, Harvey Sollberger and

We first asked which edition(s) they (1) use for performing/recording; (2) use for teaching; (3) learned from; and (4) prefer. The overwhelming majority of flutists answered ‘old’ to all questions, with a few answers of ‘both’ for question (2). The appendix to this chapter shows unedited excerpts from their responses. For those flutists who prefer the old edition, several threads appear. Many mourn the loss of flexibility and feel that phrasing, shaping and rhythmic vitality are lost in the renotation, which is unnecessarily complex. Some believe that the original notation frees the performer to think of time in a different way, without the burden of beats and subdivisions. Several flutists suggest that the proportional notation is actually more precise, not less, if one takes the time to study it carefully. Some flutists are sceptical that the new edition is actually by Berio. Several flutists believe (as do Nauert and Berio) that the later edition is just one interpretation of the original. Some comment on the history of the piece, harking back to its early fame as an example of proportional notation. We will see below to what degree performers’ interpretations differ as a result of renotation.

Method

Part I: Overall tempos and timings

Our first step was to parse the score into segments based on ‘measured’ areas, called Segments (S1, S2, *etc.*) and areas with one or more fermatas (F1, F2, *etc.*). (See Table 1.1 for order and location of S and F areas.) Our main purpose was to study the measured areas in order to compare the tempos (not only among soloists, but also various segments within each performance). We then imported each track into Bias Peak²⁵ and put markers at the beginning of each S and F area. The time values at each marker were entered into a spreadsheet programme in order to facilitate comparisons and various calculations. To create a baseline for comparison of the performances, we calculated ideal timings for all Ss and Fs based on how long each segment would last if the performer followed the indications in the score exactly. The S timings are based on the old edition, according to the number of hash marks and based on tempo (70MM. most of the time). The F timings, on the other hand, are based on the new edition, since the fermata lengths are precisely indicated. (See Table 1.2 for the ideal timings.) Based on this admittedly imperfect baseline, we calculated an ideal length for the piece of 317 seconds, or five minutes and 17 seconds (5:17).

Patti Monson for their responses. In addition, we wish to thank Patti Monson for meeting with us and sharing many of her materials, including the results of a similar survey that she conducted Dec. 2002–March 2003, with responses from Harvey Sollberger, Patricia Spencer, Jayn Rosenfeld, John Fonville, Elizabeth McNutt, and Rachel Rudich.

²⁵ Bias Peak is a popular stereo audio editing, processing, and mastering application for the Macintosh computer.

Table 1.1 Segment Locations

S/F	Tactus	1958 pg.line	1992 pg.line	Tempo/1 st note
S1	0	1.1	1.1	70 MM/ <i>sffz</i> A ₄
F1	14	1.3	1.2	<i>ff</i> E ₄ grace note tied
S2	16	1.3	1.3	<i>mf</i> F ₄ [#]
F2	48	2.1	1.7	<i>ppp</i> D ₄
S3	54	2.3	1.8	F ₄ [#] grace note
F3	86	2.7	2.4	<i>ff</i> D ₆
S4	87	2.8	2.4	<i>mf</i> C ₆ [#]
F4	92	2.9	2.5	‘return’ – <i>ff</i> A ₄
S5	93	2.9	2.5	<i>p</i> G ₅ [#]
F5	127	3.4	2.9	B ₆ ^b
S6	131	3.5	2.10	<i>p</i> F ₄
F6	146	3.7	3.2	<i>ppp</i> A ₄ flutter
S7	147	3.7	3.2	<i>sffz</i> B ₆
F7	160	3.9	3.3	<i>ppp</i> C ₆
S8	162	3.10	3.4	<i>pp</i> B ₅
F8	210	4.7	4.1	<i>mf</i> F/G ^b tremolo
S9	211	4.9	4.2	E ₄ grace note
F9	219	5.1	4.3	C ₆ –G ₅ multiphonic
S10	222	5.3	4.3	<i>pp</i> C ₅ grace note
S11	244	5.6	4.6	60 MM/F ₄ [#] grace note
S12	257	5.8	4.8	72 MM/ <i>mf</i> F ₄
F10	271	5.10	4.10	72 MM/ <i>sfz</i> – <i>pp</i> C ₄ [#]

The last step in our study of overall timings was to examine how much each performer ‘deviated’ from the ideal timings for both the S segments and the F segments. Then we calculated the mean for each segment and ran a t-test to see if there was a statistically significant difference between deviations for performers that used 1958 and those who used or were influenced by 1992.

Part II: Timings and accents within the first phrase

Our study in Part I gave us timings and tempos for segments, but did not tell us much about proportions within a segment. In order to compare proportions at a more detailed level, we selected the first phrase (which corresponds to the first line in both editions), and marked the exact times for the attack of each note. We then determined each performer’s pace for the first phrase, by taking the precise timing (number of seconds into the piece) on the note B₅, since it falls just after the fourth

hash mark in 1958 (and corresponds to a downbeat in 1992). From this note, we divided the timing by four to determine where the other hash marks (or beats) would be placed, both before the B₅ and two hash marks beyond the B₅, in order to see how steady each performer was within his or her own tempo. We also made contour graphs of each flutist's performance of the first phrase. Limits of time and space did not permit the analysis of other phrases, but we believe the opening phrase is important, not only in defining the character of the piece, but in presenting the twelve-tone row in its complete form.

Table 1.2 Ideal timings for S and F segments

Segments	No. of 'Beats'	Additional Time	'Ideal' time
S1	14.15 @ 70 MM		12.129
S2	32.12 @ 70 MM		27.531
S3	31.37 @ 70 MM		26.889
S4	4.88 @ 70 MM		4.183
S5	33.33 @ 70 MM		28.569
S6	14.88 @ 70 MM		12.754
S7	13.00 @ 70 MM		11.143
S8	48.26 @ 70 MM		41.366
S9	7.63 @ 70 MM		6.540
S10	20.37 @ 70 MM	+ 1.46 @ 60 MM	18.920
S11	11.52 @ 60 MM	+ 1.33 @ 72 MM	12.628
S12	13.93 @ 72 MM		11.608
Fermatas	No. of Seconds	Additional Time	'Ideal' time
F1	5"	+ 1.08 @ 70 MM	5.926
F2	23"	+ 4.42 @ 70 MM	26.789
F3	4"	+ 0.50 @ 70 MM	4.429
F4	5"	+ 0.67 @ 70 MM	5.574
F5	8"	+ 3.00 @ 70 MM	7.571
F6	5"		5.000
F7	8"	+ 2.00 @ 70 MM	9.714
F8	12"	+ 5.67 @ 70 MM	16.860
F9	11"	+ 4.50 @ 70 MM	14.857
F10	6"		6.000
TOTAL (Segments and Fermatas)			316.980

Note: the number of beats was calculated by counting hash marks; when an S or F segment began between hash marks, the distance in millimetres was used to calculate partial beats. In some cases, additional time was added because the tempo changed within an event (a sustained note or silence); in other cases, notes were tied from fermatas into measured time.

Results and Conclusions

Part I: Overall tempos and timings

We calculated the tempos for each performer in each measured (S) segment to see how closely they matched the tempos indicated in the score (see Table 1.3).²⁶ The averages for each segment indicate that the slowest average tempo (42.8 MM) occurs in segment S11; we suspect this is not only because the tempo indication changes to 60 MM, but also because of the extreme amount of activity. Fabbriani (at 56.6 beats/minute) comes closest to the indicated tempo for this segment. The fastest segment on average (58.9 MM) is S7, which has very few notes. It is obvious from Table 1.3 that none of the performers reaches the indicated tempo for any of the segments. Fabbriani comes closest, with an overall average tempo of 63.8; Nicolet (60.3) and Cherrier (60.0) also come close.

The variability in total duration (including both measured segments and fermata segments) for the various performances is remarkable, ranging from 4:54 to 7:58 (See Table 1.4). Fabbriani, at 5:30, is closest to the ideal length of 5:17 for the piece. When comparing the lengths of each segment (see graph in Fig. 1.1), his timings also correlate closely with the ideal timings. The possible factors contributing to this astonishing closeness are: his careful attention to the original notation and tempo markings; the fact that the recording was made in 1994, after 1992 was published, meaning that he had access to the new timings for fermatas; and the fact that he played the piece for Berio.²⁷ The two flutists who came closest to ideal timings after Fabbriani are Nicolet (old edition) and Cherrier (new edition). Cherrier is also close to ideal timings in each segment, whereas Nicolet tends to play most fermata segments short and most measured segments long. (See Fig. 1.1.)

Tables 1.5 and 1.6 show the amount of time each performer deviates from the ideal time for each S segment and each F segment. In Table 1.5, all deviation values are positive, indicating that all performers in every S segment were slower than the ideal times. From the mean deviation values, we see that segment S8 is most deviant for performers using 1958, while S12 is most deviant for performers using 1992. The totals, shown in the bottom row, clearly indicate a wide range of values for deviation, from 18.465 seconds (Fabbriani) to 167.696 (E. Graf). A one-tailed t-test comparing the mean deviations for all S segments between the 1958 group and 1992 or 'hybrid' group indicates that the differences are statistically significant ($p < 0.0001$).

²⁶ We calculated the tempo (T) for each segment as follows: $T = B/S \times 60$, where B is the number of beats in the segment and S is the number of seconds it took the performer to play the segment; B/S is multiplied by 60 to convert beats/second to beats/minute.

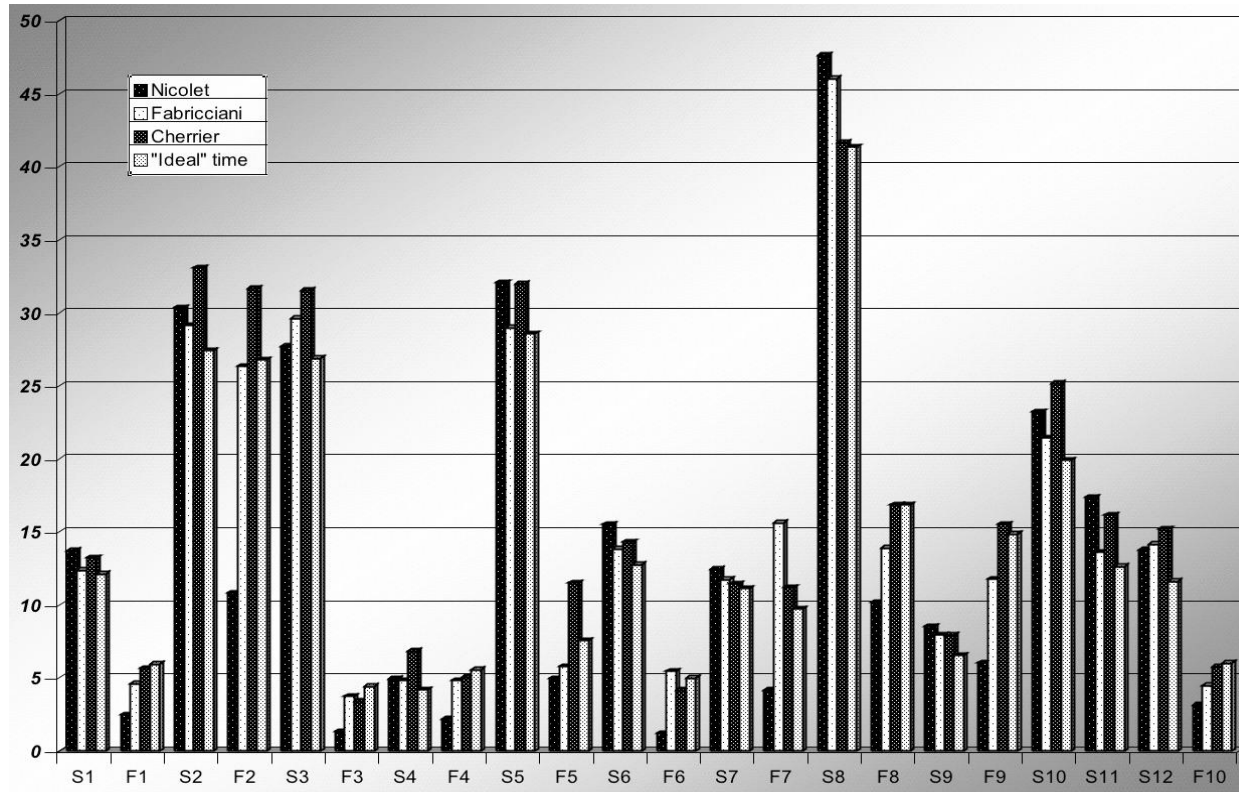
²⁷ In his email response to our questionnaire, 29 November 2004; he stated that he worked with and performed for Berio 'innumerable times' [innumerevoli volte] using the 1958 edition. He also stated that, while he performs from 1958, he uses both editions in his teaching.

Table 1.3 Tempos of measured segments for each performer in beats per minute.

	Dick	Fabbriciani	Garzuly	Gazzelloni	E. Graf	P-L. Graf	Nicolet	Sollberger	Zöller	Bezaly	Cherrier	Ave.
S1	48.0	68.7	67.8	46.4	37.6	48.3	62.0	52.2	59.0	60.0	64.1	55.8
S2	46.6	66.1	51.8	45.8	42.0	44.3	63.5	61.9	59.3	51.8	58.3	53.8
S3	48.9	63.6	57.9	43.1	36.6	45.8	67.9	56.7	54.2	51.4	59.7	53.3
S4	49.5	60.8	30.4	34.2	41.7	45.4	59.5	43.5	51.8	40.8	42.9	45.5
S5	52.1	69.0	54.6	46.7	47.4	54.8	62.4	58.6	65.7	52.8	62.5	57.0
S6	48.9	64.6	50.6	51.8	39.4	52.4	57.6	50.6	46.4	49.1	62.4	52.2
S7	69.0	66.5	65.2	58.4	37.1	59.5	62.7	50.6	59.6	51.5	68.2	58.9
S8	50.8	62.9	55.1	56.1	41.8	48.0	60.8	63.3	61.6	56.1	69.6	56.9
S9	37.0	57.7	48.0	34.1	30.8	40.1	53.8	51.4	43.3	41.9	57.9	45.1
S10	42.7	61.1	49.3	48.5	32.0	50.0	56.4	58.1	50.8	39.2	52.1	49.1
S11	36.4	56.6	41.0	36.0	36.7	41.4	44.4	53.1	33.0	44.0	47.8	42.8
S12	30.8	59.1	35.1	38.0	35.0	45.9	60.6	44.2	32.5	40.4	54.9	43.3
Ave.	46.6	63.8	51.5	46.3	38.9	48.0	60.3	56.2	52.7	49.6	60.0	52.2

Note: Average tempos are calculated from the total number of measured beats divided by total time in seconds x 60 (*not* from the average of the 12 segments)

Fig. 1.1 Graph of timings (all segments) – Nicolet, Fabricciani, Cherrier and ideal timings



Note: x-axis shows segment numbers; y-axis indicates seconds

Table 1.4 Total Duration of each recorded performance

Performer	Time (min:sec)	Edition
Nicolet	4:54	1958
Fabbriciani	5:30	hybrid
Cherrier	5:59	1992
Zöller	6:02	1958
Sollberger	6:10	1958
Garzuly	6:21	hybrid
P-L. Graf	6:37	1958
Gazzelloni	6:43	1958
Dick	7:12	1958
Bezaly	7:20	hybrid
E. Graf	7:58	1958

Note: these timings differ from those indicated on the recordings because we eliminated silences at the beginnings and ends of tracks. The ideal time for the piece is 5:17. 'Hybrid' indicates that the performer plays from 1958 but studied 1992.

In Table 1.6, most of the mean deviation values are negative for the performers playing from 1958 (indicating durations less than ideal) most likely because fermata lengths were not specified in the old edition. The only 1958 performers with positive sums are Dick and Sollberger. Nicolet was the most deviant and entirely on the short side (all negative numbers). The only positive mean by segment for 1958 performers is F10, probably because this segment is the final gesture of the piece. The 1958 performers were most deviant in segment F2, averaging 7.215 seconds shorter than ideal. This high number probably results from the fact that the F2 segment contains more fermatas than any other. The 1992 or 'hybrid' performers showed the largest span for F2, from a low of -9.867 (Garzuly) to a high of 11.004 (Bezaly). A one-tailed t-test comparing the mean deviations for all F segments between the 1958 group and 1992 group indicates that the differences are statistically significant ($p = 0.012$).²⁸

²⁸ We want to thank our colleague in the Temple University Department of Psychology, Robert W. Weisberg, for assisting us with statistical analyses.

Table 1.5 Deviation from 'ideal' in measured-segment length in seconds for each performer

	Old Edition (1958)							New Edition (1992) or hybrid					
	Dick	Gazzel- loni	E. Graf	P-L. Graf	Nicolet	Soll- berger	Zöller	Mean	Bezaly	Cher- rier	Fabric- ciani	Gar- zuly	Mean
S1	5.545	6.177	10.473	5.447	1.574	4.121	2.259	5.085	2.029	1.106	0.229	0.400	0.941
S2	13.950	14.658	18.449	16.094	2.919	3.682	5.085	10.691	9.743	5.638	1.718	9.741	6.710
S3	11.617	16.814	24.604	14.211	0.820	6.314	7.827	11.744	9.723	4.644	2.720	5.642	5.682
S4	1.738	4.388	2.837	2.273	0.734	2.544	1.469	2.283	2.996	2.638	0.630	5.458	2.930
S5	9.851	14.246	13.621	7.910	3.487	5.580	1.847	8.077	9.340	3.412	0.413	8.025	5.298
S6	5.488	4.493	9.922	4.268	2.750	4.880	6.480	5.469	5.418	1.562	1.064	4.878	3.230
S7	0.159	2.222	9.890	1.965	1.305	4.274	1.944	3.108	4.014	0.289	0.593	0.823	1.430
S8	15.622	10.258	27.853	19.021	6.246	4.382	5.614	12.714	10.231	0.264	4.669	11.168	6.583
S9	5.817	6.882	8.318	4.888	1.966	2.368	4.023	4.895	4.376	1.364	1.399	2.994	2.533
S10	10.752	7.097	21.068	6.261	3.291	2.618	5.886	8.139	13.493	5.230	1.507	6.623	6.713
S11	8.540	8.773	8.359	6.001	4.728	1.899	10.734	7.005	4.891	3.518	0.994	6.194	3.899
S12	15.519	10.400	12.302	6.618	2.174	7.286	14.115	9.773	9.104	3.604	2.529	12.228	6.866
Totals	104.598	106.408	167.696	94.957	31.994	49.948	67.283	88.983	85.358	33.269	18.465	74.174	52.817

One striking observation from Table 1.6 is that Sollberger is much closer to the fermata timings of the new edition than the other performers, even though his recording predates the new edition. Even the sum of the absolute values of all his deviations is less than that for each of the other performers. This led us to look more closely within each fermata section (since some fermata sections had multiple fermatas). We found that the timings are remarkably close. For example, within the F2 section Sollberger's timings in seconds are as follows (*1992*'s specified times are given in parentheses): $D_4 = 4.6$ (5); $B_4 = 5.3$ (6); $C_6 = 7.6$ (7); $G\sharp_4 = 5.0$ (5). The strong correspondence between these timings suggests that the fermata timings in *1992* may have been modelled after Sollberger's recording, which was well-known and highly respected.²⁹

Part II: Timings and accent within the first phrase

Fig. 1.2 shows each flutist's performance of the first phrase as a contour graph, which shows the exact placement of each note or gesture in time. The vertical axis is pitch, with each tick representing a C (from C_4 to C_9). The horizontal axis is time, with each tick representing 0.5 second (beginning at -0.5 , or half a second before the first note).³⁰ The grey vertical lines represent the location of hash marks in the score, calculated according to each performer's individual tempo. The musical example above the graphs shows the *1958* version of the phrase, with musical events numbered. These graphs are arranged in order of duration from shortest (5.5 seconds) to longest (10.7 seconds).

The most 'accurate' performance of the first phrase, at least as far as concerns placement of notes within the hash marks, is Robert Dick, who had one of the slowest tempos for this phrase. At this point we might recall Berio's directive to Nicolet (quoted above): 'Each flutist can therefore adapt the degree of speed, but always keeping the indicated proportions.' Two of the flutists who come closest to Berio's tempo of 70 MM for this segment (Nicolet at 62 MM and Cherrier at 64.1 MM), make numerous adjustments according to the hash marks: both 'jump the gun' three times in the first part; then Cherrier is late for the last grace-note gesture. Dick and Nicolet use *1958*; Cherrier uses *1992*. In this first phrase, Dick comes closest to realizing Berio's proportions while Fabbriani also comes very close, with just one note coming sooner than the hash mark. One possible conclusion is that Berio's suggested tempo necessitates compromises. Then again, Fabbriani comes quite close in maintaining a brisk tempo and at the same time

²⁹ It is equally possible that Sollberger anticipated the desired timings as a result of coachings by Berio, who urged him to take more time with the fermatas (personal interview with Sollberger, 14 August 2005).

³⁰ The programmes used to create these contour graphs were written by Alexander Brinkman as part of a suite of programs for graphic analysis of musical scores. See Alexander R. Brinkman and Martha R. Mesiti, 'Graphic Modeling of Musical Structure', *Computers in Music Research* 3 (1991): 1–42.

Table 1.6 Deviation from ‘ideal’ in fermata-segment length in seconds for each performer.

	Old Edition (1958)								New Edition (1992) or hybrid				
	Dick	Gazzel- loni	E. Graf	P-L. Graf	Nicolet	Soll- berger	Zöller	Mean	Bezaly	Cher- rier	Fabric- ciani	Gar- zuly	Mean
F1	-1.643	-2.348	-1.197	-1.228	-3.462	-0.723	-2.100	-1.814	0.469	-0.259	-1.336	-1.540	-0.666
F2	-8.145	-6.767	-3.487	-9.215	-15.973	1.588	-8.507	-7.215	11.004	4.846	-0.440	-9.867	1.386
F3	0.869	-2.348	-0.285	-0.398	-3.086	-0.391	-0.665	-0.889	-0.527	-1.018	-0.682	-1.918	-1.036
F4	-1.576	-1.799	-1.504	-1.839	-3.392	0.197	-2.951	-1.838	1.174	-0.527	-0.755	-1.580	-0.422
F5	0.642	-0.829	0.526	-0.639	-2.616	2.101	-0.797	-0.230	6.795	3.938	-1.800	-1.337	1.899
F6	1.320	-2.224	-2.452	-1.527	-3.787	-1.382	-1.336	-1.627	-0.789	-0.834	0.455	-1.271	-0.610
F7	-1.537	-0.682	0.165	-0.406	-5.541	-0.597	-3.244	-1.692	7.516	1.492	5.885	0.697	3.897
F8	12.683	-3.030	0.090	-3.736	-6.692	1.125	-0.478	-0.005	5.918	-0.014	-2.948	0.463	0.855
F9	3.024	-2.935	-4.022	1.480	-8.826	-2.522	-5.037	-2.691	3.878	0.655	-3.096	-2.782	-0.336
F10	3.834	1.667	4.128	1.391	-2.870	2.580	1.830	1.794	1.554	-0.238	-1.517	8.314	2.028
Totals	9.471	-21.295	-7.958	-16.117	-56.245	1.976	-23.285	-16.208	36.992	8.041	-6.234	-10.821	6.995

Fig. 1.2 Contour graphs of the first phrase for each performer .

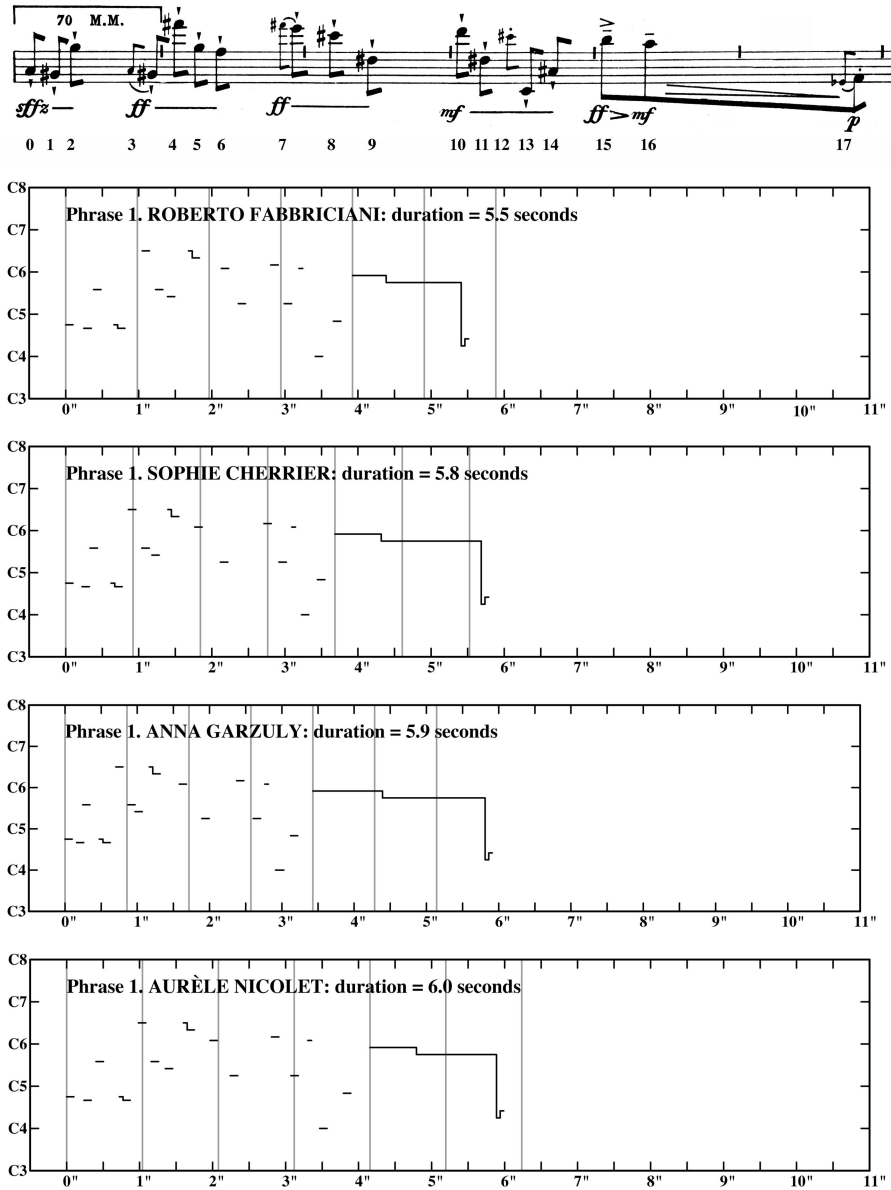


Fig. 1.2 (cont.)

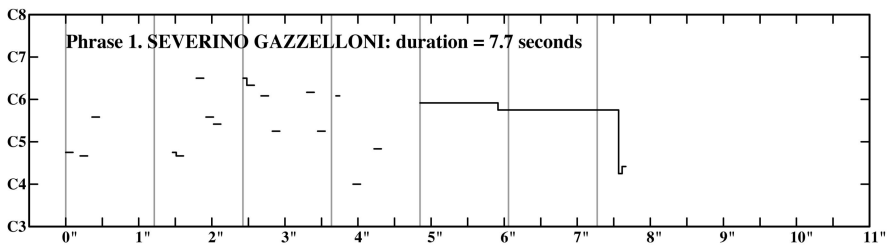
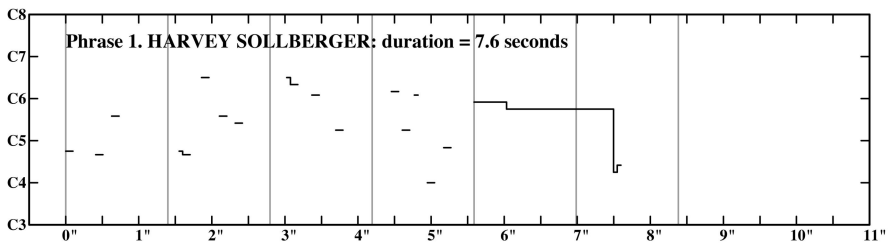
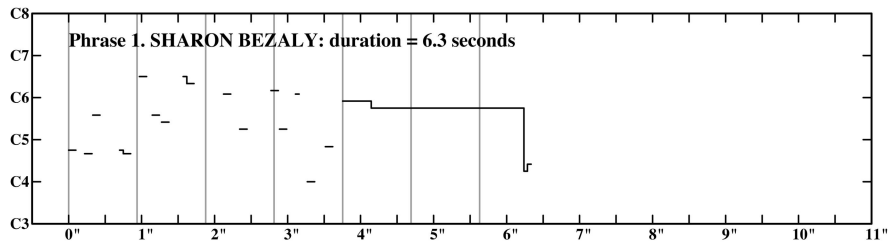
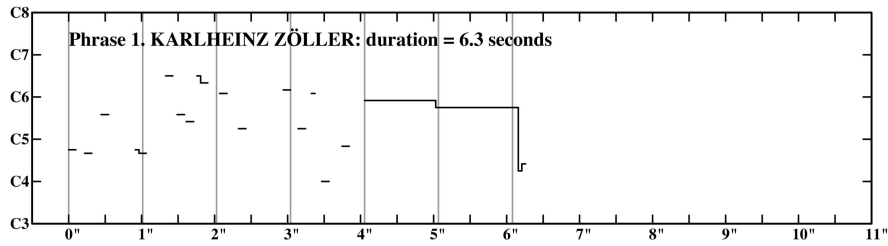
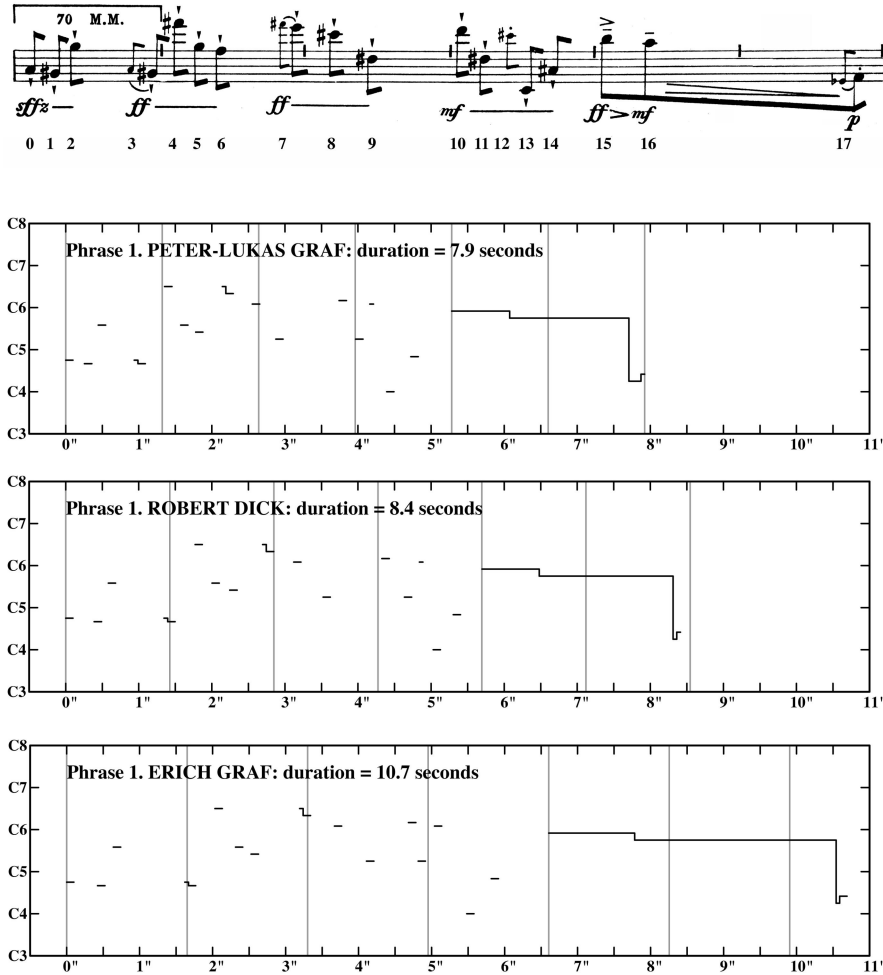


Fig. 1.2 (cont.)



rendering the notated proportions. As Claudia Anderson states: ‘Tension arises when performers strain to maintain the metronome pulse of 70, while simultaneously coping with notes, dynamics, and articulations. It is just this tension that helps create successful performances.’³¹

The graphs in Fig. 1.2 also suggest an answer to a larger question relating to the perceptual difference between performances from proportional versus metric

³¹ Claudia Anderson, ‘An Operatic View of *Sequenza*’, *Flute Talk Magazine*, 24/2 (2004): 12.

notation: does the listener perceive a pulse? ³² The performances from of influenced by 1992 are no more 'periodic' than those from the old edition. The notes that should occur on the beat (corresponding to the vertical grey lines in Fig.1.2) in the first part of the phrase actually occur early.³³ According to Joel Lester, 'without sufficient regularity in any set of impulses, there are too few cues which resonate within a listener to enable him or her to establish a metric grid.'³⁴ John Roeder suggests that there exist other modes of perception through which we can understand this piece: 'it – like much of Berio's music – seems to have a clear temporal directedness arising from the distinctions one observes between stressed points in time, and the apparent continuity from one timepoint to the next.'³⁵ Fig. 1.2 suggests that it is doubtful that a listener would perceive a pulse in any of the performances, regardless of edition.

To address proportion at an even more detailed level we examined the defining motif for the piece: the first three notes – A₄-G[#]₄-G₅ (a three-note chromatic segment).³⁶ Both Berio's renotation in the Nicolet letter and 1992 make the first note twice as long as the second two notes. (See Exx. 1.1–3.) Note the slight difference between Exx. 1.2 and 1.3: the latter is written as a demisemiquaver quintuplet. The distance between the first three notes in 1958 measured from the centre of each note-head shows that the last two notes are closer together than the first two, but only by a slight margin, not half the distance. The downward versus upward stem direction makes the second two notes look much closer together than they actually are. Did Berio expect the performer using 1958 to interpret the precise distance or to depend on the optical illusion created by the stems? Assuming that the rhythm of 1992 is the desired result, the only performer who matched the timing precisely is Cherrier,³⁷ who plays from the new edition. Bezaly's rhythm (1992) is also close to the rhythm of the new edition, but so are Fabbriani (hybrid), Dick and Sollberger (both 1958). Again, we find that performers who use the old edition often come close to what appear to be Berio's desired results.

The pervasive three-note chromatic motif mentioned above occurs again after the first hash mark, as F[#]₆-G₅-F₅. The rhythm in 1992 helps the performer to make

³² Although one might argue that 1992 is not metric because there are no meter signatures, the traditionally-notated rhythms imply 2/8 meter, with frequent changes to other meters based on added and subtracted values.

³³ One would actually expect these notes to occur later, since the first two 'beats' in 1992 are each a demisemiquaver note longer.

³⁴ Joel Lester, 'Notated and Heard Meter', *Perspectives of New Music*, 24/2 (1986): 122.

³⁵ John Roeder, 'A Calculus of Accent', *Journal of Music Theory*, 39/1 (1995): 2. It is curious that Roeder does not mention the 1992 edition, nor whether it might be heard and understood in the same way as 1958.

³⁶ For an analysis of this three-note motif/gesture, see Cynthia Folio, 'Luciano Berio's *Sequenza for Flute*: A Performance Analysis', *The Flutist Quarterly*, 15/4 (1990): 18–21.

³⁷ The time from A₄ to G[#]₄ is 0.446 seconds; the time from G[#]₄ to G₅ is 0.223 seconds.

this association, but this rhythm is not an accurate representation of either 1958 (Ex.1.1) or the Nicolet-letter version (Ex. 1.3).

In general, we found it difficult to determine which edition a performer used from timing information alone. Performers using both editions could be either close or far from the ideal values, both overall and for individual segments. The most obvious difference between performances using 1958 and those using 1992 is that the former did not sustain the fermatas for as long, remembering the fermata timings from 1992 were used as the ideal because they were not specified in 1958. While statistical analysis sheds some light on the differences between the two editions, it would have been helpful to have more recordings from the new edition – statistically, it would have been desirable to have an equal number of each. However, in our preliminary survey, we found that most professional flutists dislike the new edition and do not use it, except perhaps for teaching.

We want to emphasize that our analysis of deviations in timings should not be taken as the only criteria for aesthetic judgements about the recordings. Closeness to notated timings, tempos, and proportions does not necessarily make a performance outstanding and deviation does not necessarily make one poor. We find much to admire in all of the recordings. Each interpretation is virtuosic and demonstrates superb technique, control and lyricism. Furthermore, each performance is unique and expressive in different ways. Performers who approach Berio's tempo, for example Fabbriani and Cherrier, demonstrate phenomenal acrobatics and generate a high level of excitement by playing 'on the edge'; both are crisp and vibrant, and events are connected with a sense of breathlessness. Nicolet, whose overall time also comes close to the ideal, projects a sense of urgency through his clipped staccato, short fermatas, and quick grace notes. Performers who play at slower tempos bring out the lyrical qualities of the piece, for example Dick, Bezaly, P-L. Graf, and E. Graf. While E. Graf's performance is expansive (as the longest of the eleven), P-L. Graf's sounds deliberate and somewhat cautious.³⁸ Dick projects an improvisatory, almost whimsical quality, while maintaining the most accurate proportions in the first phrase; he also employs a colouristic effect in substituting whistle tones for two of the harmonics. Bezaly's performance could be described as ethereal, due in part to her astounding dynamic contrast and the lengths of her fermatas, played almost entirely without vibrato. The performances by Sollberger and Garzuly are particularly distinguished by their articulation. Sollberger's staccatos seem to crackle and the accents explode like firecrackers; the contrast between the articulated and the sustained results in a more 'polyphonic' performance. Garzuly seems to make a conscious effort to differentiate *marcato* and staccato by making the former longer. Gazzelloni's version is distinguished mainly because it was the first, recorded before a

³⁸ One of the reasons for Erich Graf's expansiveness is probably that, in a coaching session with Berio in the late 1960's, 'he [Berio] was adamant that I not be inhibited in serving the silences for as long as he had delineated' (Email message from Graf to us, 23 May 2005).

performance tradition for the piece had been established; his tone and vibrato are in a more romantic tradition (especially in contrast to Bezaly) and he takes many liberties in his interpretation. Zoller also uses an intense vibrato and projects an assertive and vigorous quality.

It is fascinating to listen to all eleven performances in succession. The differences in interpretation speak to the quality of the composition, as well as the artistry of the performers. The rich variety probably results, at least in part, from the freedom suggested by the spatial notation of the original edition. We tend to agree with Weisser's account of what was gained and what was lost in creating 1992:

Berio may have finally achieved the original precision he sought from the very beginning, but I believe certain things were 'lost in translation.' ... For all the control, precision, and intent Berio sacrificed in the 1958 version, I am persuaded that he got back something far more interesting. The subtext of the 1992 revision is that Berio feels it is now more important to have a 'proper result' than to have the *possibility* of a richer amount and variety of relationships.³⁹

Appendix

Responses (excerpts) from professional flutists regarding the advantages/disadvantages of the two editions (names are included only when explicit permission has been granted; all quotes are from email messages):

- The first edition is better because it corresponds to the original compositional thought but surely presents greater difficulty interpretatively, while the second explicit edition obviates these difficulties and supplies a path to execution that is more detailed. (Fabbriciani⁴⁰)
- The first edition motivates the fantasy and the inventiveness of the interpreter. It favors the interpretive freedom that is an actual parameter of the aesthetics to which the *Sequenza I* belongs. (Fabbriciani⁴¹)
- The 'old' edition is the piece. The new edition exists only because flutists have played the original so badly. Berio himself told me this at IRCAM in Paris in 1978. (Dick)

³⁹ Weisser, *Notational Practice in Contemporary Music*, p. 51.

⁴⁰ [La prima edizione è migliore perché corrisponde al pensiero compositivo originale ma sicuramente presenta maggiori difficoltà interpretative mentre la seconda edizione ovvia a queste difficoltà e fornisce una via esecutiva più dettagliata.]

⁴¹ [La prima edizione incentiva la fantasia e l'inventiva dell'interprete. Favorisce la libertà interpretativa che è un parametro proprio dell'estetica alla quale la *Sequenza I* appartiene.]

- The proportional notation in the original gives rhythmic life that can't be notated traditionally, while the new edition smothers this and makes the phrases much harder to see. (Dick)
- Although there is in fact very little margin for freer interpretation with spatial [notation], due to all the activity in the piece, I see the score as more of a sound AND visual landscape that I am operating in, compared to the traditional score. Particularly after learning from the spatial score, I find the measured one confining and almost 'patronizing' ... (Anderson)
- The original score is quite clear and exacting, and I believe that anyone who wouldn't take pains to learn it accurately would do the same with a notated score. And you would have the added problem, with measured notation, of not seeing the forest through the trees of notes, counting and subdividing and rearranging duples and triples, etc. (Anderson)
- The new edition, besides being rhythmically verbose unnecessarily, changes some of the phrase structures, changes drastically the nuance of some notes because of their now strong to weak placement and the need to fit them into a more traditional rhythm. (Monson)
- [Berio] started a little historical cell in our repertoire [because of the spatial notation]... and then so many years later he takes the history out of the piece? (Monson)
- ... the only advantage of the new version is to see a possibility of interpretation of the original (Bledsoe)
- ... having a spatially notated score in front of you (or even in your head if you are playing from memory) would make for a different performance entirely; the differences would be psychological and therefore musical (I'm not sure there can be such a separation in this case). (Bledsoe)
- ... the exact version could be helpful when learning the piece. However, the precise is restrictive while performing. (Bezaly)
- [Sam Baron showed me] a rewrite he had made of Berio's *Sequenza* in 6/8 meter. I thought at the time that it might be a fine 'teaching tool', but could compromise the extemporaneous Baroque-ornamentation quality of the piece that Berio was attempting to achieve. (E. Graf)
- I find the new version tense and stiff. In a masterclass on the piece, my students thought they could hear the difference between those who used the old edition and those who played from the new one. (Heiss)
- The great thing about the original version was just the very fact that the player was called upon to play very precise rhythms WITHOUT all the tuplets and hair-splitting that minute subdivisions in conventional notation engender. In my experience, though, very few flutists did really look closely enough at the visual placement of the notes and their relations to each other as notated in the original version. (Sollberger)
- I had to warn my students that this new [proportional] notation didn't really make the piece easier to play; it just made it different. (Sollberger)

- ... when playing off of the new version, having a pulse is very grounding for my students and for me. (O'Connor)
- When studying the old [edition], I remember sitting down with [Sam] Baron and a ruler to measure where things were in each 'measure' and what value each note should have. He had a very systematic approach to the piece. (O'Connor)
- ... the music is a bit more spontaneous when played from the old version.
- I feel it has lost something important, that imposing a 'beat' inflection interferes with the 'life,' the internal generation of musical shapes in the spatial notation. Furthermore, ... the spatial notation is MORE specific, not less so.
- ... the meters and note values can be an imperfect translation of what the composer has conceived. In the case of the *Sequenza*, the initial conception, with the clarity of its spatial notation, is stronger than the later one. A helpful analogy might be 'digital' (the new version) vs. 'analog' (the old).
- I feel the musical shapes of the *Sequenza* lose something if they are forced into a metered, quantifiably measured rhythmic frame.
- The original *Sequenza* is full of possibilities and opportunities for the interpreter, and is important also from a historical and pedagogical standpoint.
- I don't want to be manipulated by another person's interpretation of the work (which is, I suspect, not even Berio's vision, but more likely that of one of his student assistants).