Technical, interpretive and aesthetics issues in the performance practice of contemporary music[1]

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Abstract: This paper addresses five common performance questions encountered in contemporary music: (1) the historical demands placed on the performer and the technical solutions rooted in practice and rehearsal modes of long-standing usage, (2) the subtle issue of interpretive decisions based upon both internal-practical and external-extra-musical features of a work, (3) the technical and interpretive issues through the invention of idiosyncratic notations and score concepts that can create performance problems, (4) the tradition of exploring existing instruments for new sound possibilities and, finally, (5) compositional procedures that generate problems of music realization or prevent accurate performance. Drawing largely upon my own conducting and compositional experience, this discussion will take place in the context of music by some of the most important composers writing over the past thirty years.
Keywords: music performance, music interpretation, contemporary music, twentieth-century music, performance practices, rehearsal practices.

Aspectos técnico-interpretativos e estéticos nas práticas de performance da música contemporânea

Resumo: Esse estudo aborda cinco questões da performance musical comumente encontradas na música contemporânea: (1) as demandas históricas feitas aos performeres e as soluções técnicas baseadas em práticas de performance e de ensaio consolidadas no tempo, (2) a delicada questão das decisões de interpretação baseadas em características tanto interno-práticas quanto externo-extra-musicais das obras, (3) as questões técnicas e intrepretativas resultantes da invenção de notações idiossincráticas e conceitos de partitura que podem gerar problemas de performance, (4) a tradição de explorar novas possibilidades sonoras em instrumentos já existentes e, finalmente, (5) procedimentos composicionais que geram problemas na realização musical ou impedem uma performance precisa. Partindo de minha própria experiência como maestro e compositor, essa discussão considera o contexto de obras dos mais importantes compositores atuantes nos últimos 30 anos
Palavras-chave: performance musical, interpretação musical, música contemporânea, música no século XX, práticas de performance, práticas de ensaio.

Catching up to, or even staying current with, performance practice issues in new music is the difficult and often-neglected duty of conductors and performers. This can be a daunting task since at no time in history has there existed such an enormous variety of styles of music and compositional approaches. The sheer number of different vocabularies being used defies any taxonomy and renders existing terminology almost totally meaningless. What do formerly acceptable terms like "conservative", "radical", "avant-garde" and "eclectic" mean given the range of musical resources upon which today's composers routinely draw? The attempt to create various period designations within the recent past, such as "modern", "post-modern", "post-tonal" etc., neither express the diversity of recent music, nor show the real mixture of styles present. Consistency of style in a composer's music seems to have given way to exploration of the technical, expressive, and instrumental limits

[1] *Per Musi* agradece às editoras *Universal Edition, Ricordi, Editions Salabert, C. F. Peters, G. Schirmer, Boosey & Hawkes* e aos diversos compositores citados nesse texto pela utilização de excertos de partituras e manuscritos musicais.

of performers and audiences alike. Increasingly, I find that a growing number of composers are resisting stylistic type-casting and are seeking greater diversity within their own output, even within individual works. While this is especially true in a number of prominent European composers, I find this in younger Americans, from my own students to new works I come into contact with from around the country. Composition may never have been this alive to new possibilities, nor this extended into every possible solution to expressive, compositional problems.

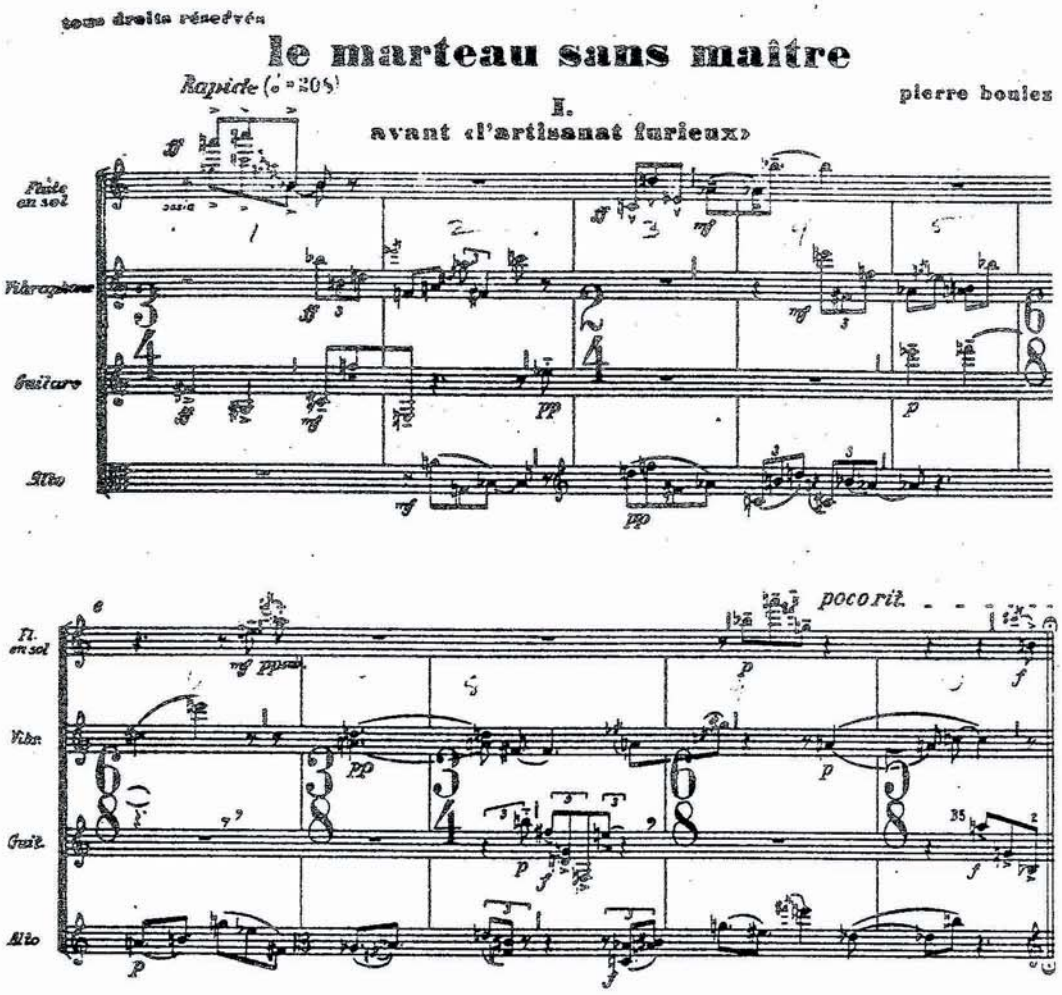
The preparation of contemporary music for performance still relies heavily on rehearsal techniques of long standing. More and more, however, composer's investigations of new sounds, new levels of musical complexity, and new means of communication to performers (and, ultimately, audiences) demand new performing and preparation approaches quite different from previous pedagogy and practice. Often, the limits of what had been considered idiomatic have been stretched beyond recognizability, making a great deal of recent music difficult to approach by performers and conductors alike.

My purpose in this paper is to address some of the main topics in contemporary performance practice and give some indications of the reasoning process involved in confronting the more unusual performance issues that present themselves. I will divide my discussion into five categories that I believe identify the main performance questions encountered in contemporary music. First are the more historically typical demands placed on the performer, the technical solutions for which usually are rooted in practice and rehearsal modes of long-standing usage. Second are the more subtle issues that involve interpretive decisions based upon both internal-practical and external-extra-musical features of a work. Conductors and performers frequently do not address these issues in contemporary music, but many works not only invite but demand such study. The third area of investigation concerns composer's attempts to resolve technical and interpretive issues through the invention of idiosyncratic notations, and score concepts that can create new, sometimes superficial, sometimes very real, performance problems. A fourth issue involves the tradition of exploring existing instruments for new sound possibilities, calling into question what is idiomatic and what is not. And finally, some composer's works now, perhaps more than ever before, raise issues that go beyond practical performance norms, posing problems of such magnitude that accurate performance can seem impossible.

I will address these matters in the context of music by some of the most important composers writing over the past thirty years. In doing so, I must draw largely upon my own conducting and compositional experience. While this may imply a certain amount of arrogant omniscience on my part, it must be said that there are few reliable pedagogical guideposts or sources of real, practical use beyond what composers demand in specific works. The only effective sources for performance practice problems, besides the composers themselves in some cases, are the performers and conductors who devote themselves to contemporary music literature. As both a composer and conductor for three decades, I hope that my experience in the area of new music performance will at least provide a framework for musicians encountering the demands made by new works.

To begin with, some performance problems are traditional in nature but amplified to the point that they appear extreme. Although such technical demands are common and highly typical in solo music, these issues became increasingly the norm in chamber music, particularly with the expansion of serial controls from pitch to rhythm, and indeed all parameters of music. The opening movement of Pierre Boulez's *Le Marteau sans Maître* **(Example 1)** makes these issues manifest in a most

obvious way. The combination of fast tempo, fluid tempo changes, complex rhythmic patterns (at least at the marked tempo), frequent register shifts in the melodic writing, appending of dynamic markings to every note, and the technical effect of the combination of all these problems at the same time act as warnings to any but the most adept players to stay away. Fermati break up phrase continuities, making any consistency of concentration in counting more difficult. The constantly changing meters present perhaps the only real assistance to the player, giving a perceivable pattern of pulsation that will also, if only through the visual assistance of the conductor's beat pattern, permit him or her to stay in the correct measure of the music. All of these factors pertain to every movement of this 35 minute work. The key to the successful execution of this passage, and the work as a whole, is simply patience, both regarding individual and group preparation. Since the work was written with specific players of the Domaine Musicale in mind, clearly Boulez knew that the music was of great difficulty but nevertheless possible. Beyond the past Domaine Musicale and present Ensemble Intercontemporain, however, few professional groups will take on the work, if for no other reason than that it is very hard to project how long it will take to bring the work to performance quality.



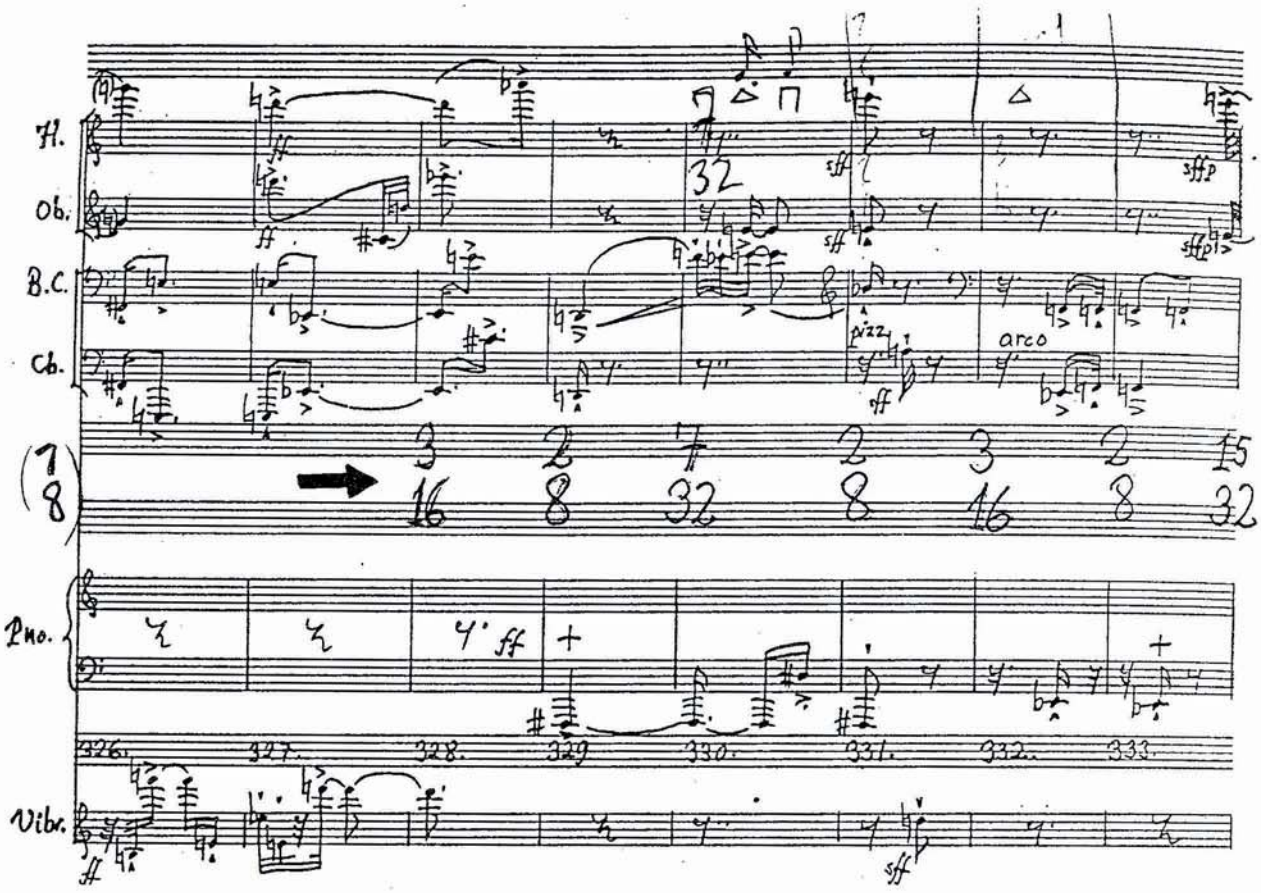
Example 1: Pierre Boulez's *Le Marteau sans Maître*, movement 1, mm. 1-10.

The structural goals of Boulez's serial approach in *Le Marteau* raise some serious questions in execution of what had been considered musical detail, particularly the rendering of accurate dynamics in the course of rapidly moving lines.[2] I think it is fair to say that dynamics usually are the last element to be added to the practice routine for nearly all performers. For *Le Marteau,* leaving dynamics to last would be a liability, especially as one strives for a high level of performance. Further, some kind of absolute value for dynamic markings is assumed, with some serious ramifications for textural balance and even for individual parts. High tones on the flute, usually harder to play softly than other registers, will probably not sound as soft as pitches marked at a louder dynamic in lower registers. This, of course, is nothing more than re-stating the musical criticisms of serialism articulated in the 1950's by Iannis XENAKIS in the *Gravesaner Blätter* (1955) and later in his book, *Musique Formelles* (1963).

Important questions requiring practical answers remain, however. Is ***mp,*** for example, the same dynamic, then, not only throughout the texture but even within a single part? What happens to the perception of the structure of the movement (or even the entire work) if the fluid tempo changes are not precise or the dynamic changes are not made with a modicum of accuracy? If the difficulties become great in a passage, is it preferable that the player compromise in dynamic, pitch, or rhythmic accuracy? Will a conductor (besides Boulez) be able to hear mistakes when made in a texture of such detail and complexity? I ask these questions not from the point of view of the ensemble but out of the private, universal inward fear of any player. None of them are unanswerable given the performance record of *Le Marteau,* provided some allowance be made for slight inaccuracies in live performance. The instrumental writing is difficult but not by any means unidiomatic or unlearnable.

Another example is from the work of the prominent American serialist, Charles Wuorinen. Because of the nature of the serialization method Wuorinen and other Americans employ, the time-point system invented by Milton BABBITT (1972, p.148-179), complex attack rhythms and difficult metric schemes occur abundantly in music of this type. **Example 2**, drawn from Wuorinen's *Speculum Speculi* , illustrates the general problem quite well. The succession of meters and variety of metric denominators with some very complex counting patterns at the marked tempo create a very complicated texture to negotiate. There is no difficulty in seeing that this music is rehearsed and performed in the same manner as the Boulez example: slow practice, followed by slow ensemble practice, gradually working up to the marked tempo. The conducting technique required is basic: concentration on absolute accuracy of beat unit and pattern change with regard to each meter, without over-conducting. Although there are some technical difficulties in the flute, oboe, and especially bass clarinet parts, the music contains fewer difficulties than *Le Marteau,*. The dynamics are more traditionally expressive in function and the tempo remains the same throughout. If the metric patterns (and therefore rhythmic patterns within them) can be mastered, the piece will fall into place.

[2] Since the dynamics bring out significant pitch collections, even projecting or restraining individual pitches from within collections, they cannot be considered mere expressive detail. They are, as everything else on each page, non-intuitive demands that require being met.



Example 2. Charles Wuorinen's *Speculum Speculi*, p.30, mm.326-333.

One rehearsal aspect that concerns both *Le Marteau sans Maître* and *Speculum Speculi* goes beyond the tradition of technical mastery derived from many slow repetitions of complicated music. Disciplined practice routine usually to permits fluidity of expression; that is, allowing performers to introduce personal, intuitive elements into the live performance. The highly non-intuitive aspects of preparing *Le Marteau* and *Speculum Speculi,* however, persist into the performance phase, the object being to master the music itself so that the execution will be a faithful representation of the work done in rehearsal. *Rubato* is, as it were, written directly into the music. Personal intuitive factors are actually destructive to an accurate performance of the music. For any degree of accuracy, the player must learn to play without tension and without trying to intuit any of the rhythms. Performer satisfaction must come with the amount of accuracy attained. Concerning practicality, I have found accuracy to be achievable even with very talented student groups, providing the amount of preparation time was adequate. Nevertheless, this music is very dangerous in performance and can, even with the best of preparation, fall apart. I see nothing wrong, however, with a composer writing music that limits who may approach it, nor in what I consider the noble striving of an ensemble of sufficient technical ability to try to meet the demanding standards these works present. The musical benefit for those who prepare and play this music will be incalculable.

Another of Wuorinen's work, *Arabia Felix,* presents similar problems to *Speculum Speculi,* although the work is generally much easier of execution. There is one technical issue, however, that adds a level of difficulty of a fairly peculiar type. I refer to the high F (f7) in the flute part, measures 1-2. The

note appears seldom in the work, only nine times in all. Of course, the pitch can be played but must be played under duress and in nine separate metric contexts. As any flautist would know, great care has to be taken in wind pressure and head angle to be certain of having the proper wind speed and posture necessary to produce the pitch. The importance of the note is reinforced by its appearance on the opening downbeat of the work, corresponding structurally to the pitch class 0 in row Prime 0, articulating a vital structural downbeat for pitch and time-point rhythmic purposes.[3] Yet the octave chosen severely endangers reliability of performance. I mention this since this is one of the few times Wuorinen takes such a technical risk. While the vast majority of the piece is very much within the capabilities of most flautists, these few measures take *Arabia Felix* out of their hands and place it with only the very best of the best if the opening is to come off with confidence.[4] Even with those players, accidents can happen.

Given the focus on the overall difficulty of most recent music, a very exciting but often unaddressed issue involves my second category for discussion: the interpretation of expression, often involving making highly creative decisions when confronted with alternatives, either notated or implied. These problems can arise from purely abstract musical issues but also can be a function of the aesthetic position the work or composer may take. I find this latter area to be especially the case in the music of composers from the former Soviet Union. Their music is generally more programmatic and often more autobiographical than the music of any other country or area. There is certainly a tradition for such a view, overtly expressed in the music of Dimitri Shostakovich, who had such a musical and personal influence on contemporary Russian composers.[5]

The two most significant composers of this group, Alfred Schnittke and Sofia Gubaidulina, certainly manifest this programmaticism, each in their own way. Both have been, probably appropriately, considered eclectic in style and compositional approach - Schnittke has been called hyper-eclectic, especially for certain of his works.[6] Both frequently avail themselves of tonality in a non-Romantic, programmatically associative manner for the purpose of making a musical and dramatic point usually tied to the musical structure of their pieces. For Schnittke, the drama is political and a real sense of commentary is sought; for Gubaidulina, her inner world is of greater concern, meaning her deep mystical, religious ideas.

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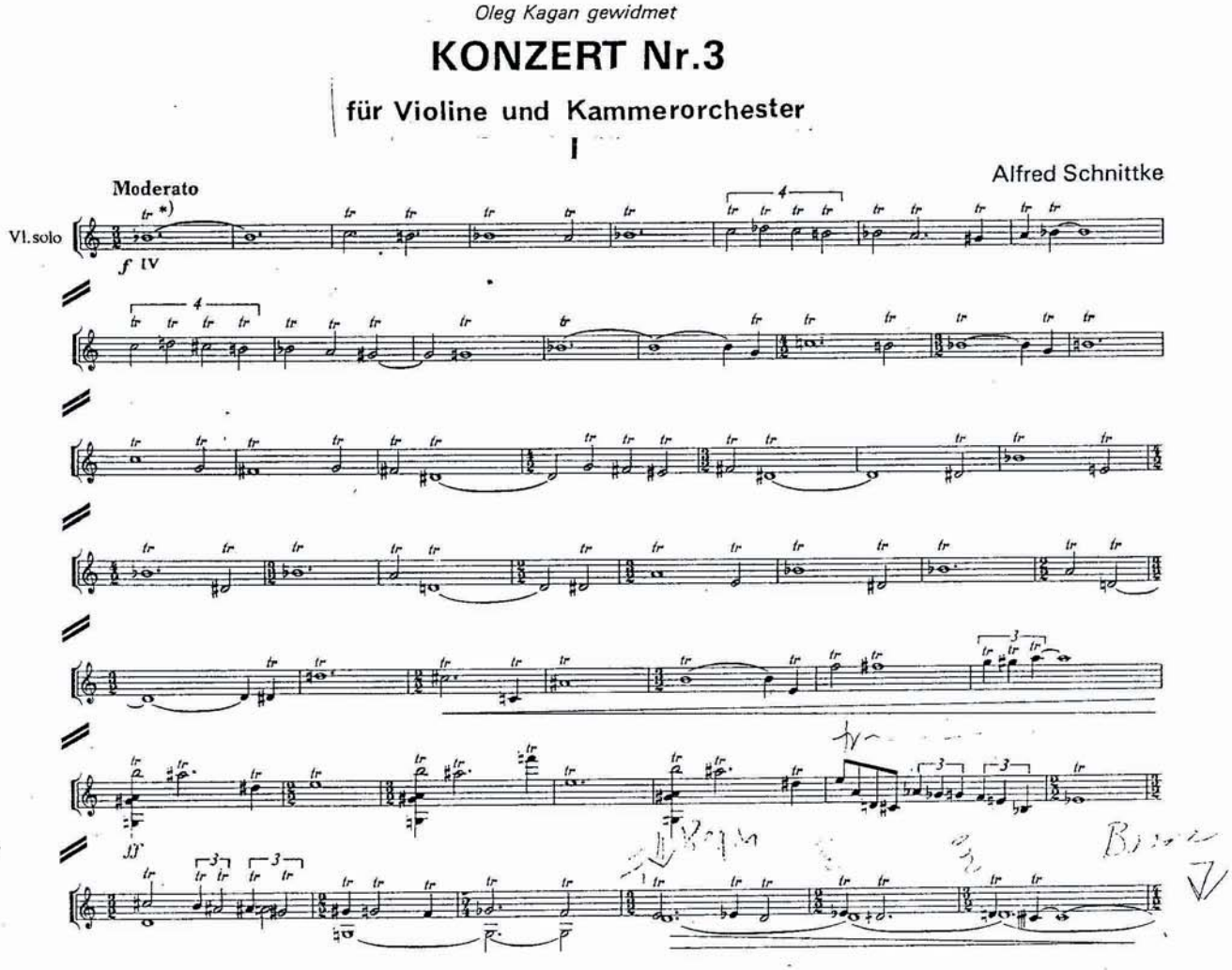
[3] Moreover, pitch foci in Wuorinen's music generally present added, important structural issues. cf Karchin, Louis. *Pitch Centricity as an Organizing Principle in Speculum Speculi by Charles Wuorinen,*

[4] I refer to such as the specialists in contemporary flute music as Harvey Sollberger, John Heiss, Robert Dick and Pat Purswell.

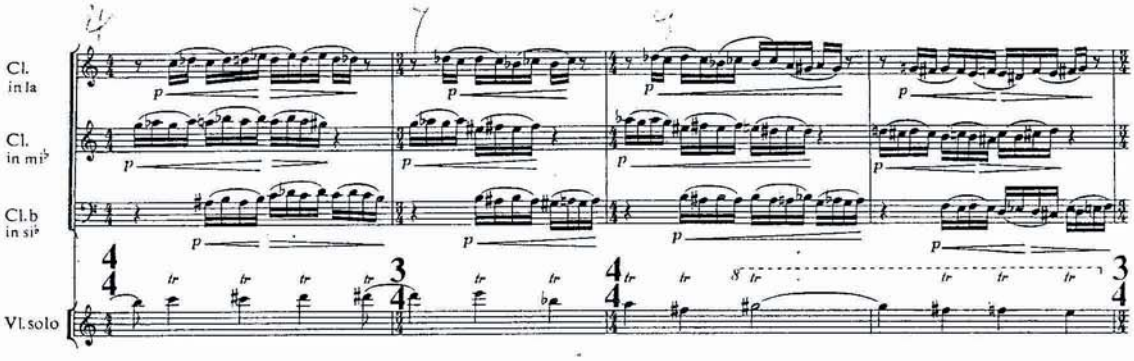
[5] I don't want to infer that the oppressive political situation for artists in Russia at that time always enforces a political interpretation as a natural "text" to be "read" into the music. There is ample primary source justification for this in many cases and a growing literature on the subject, for which see Haas, David. *Leningrad's Modernists: Studies in Composition and Musical Thought, 1917-1932,* Peter Lang Publishing: Whatever, 1998. Taruskin, Richard. *Defining Russia Musically : Historical and Hermeneutical Essays,* Princeton Univ Press: Princeton, NJ, 1997. Taruskin, Richard. *Text and Act : Essays on Music and Performance,* Oxford Univ Press: Oxford, 1995.

[6] See especially Schnittke's Requiem and *Concerto Grossi,* where the collision of different worlds personified by a wide variety of musical styles in juxtaposition and superimposition forms the deliberate political program of the colliding worlds of the Soviet Union and the West.

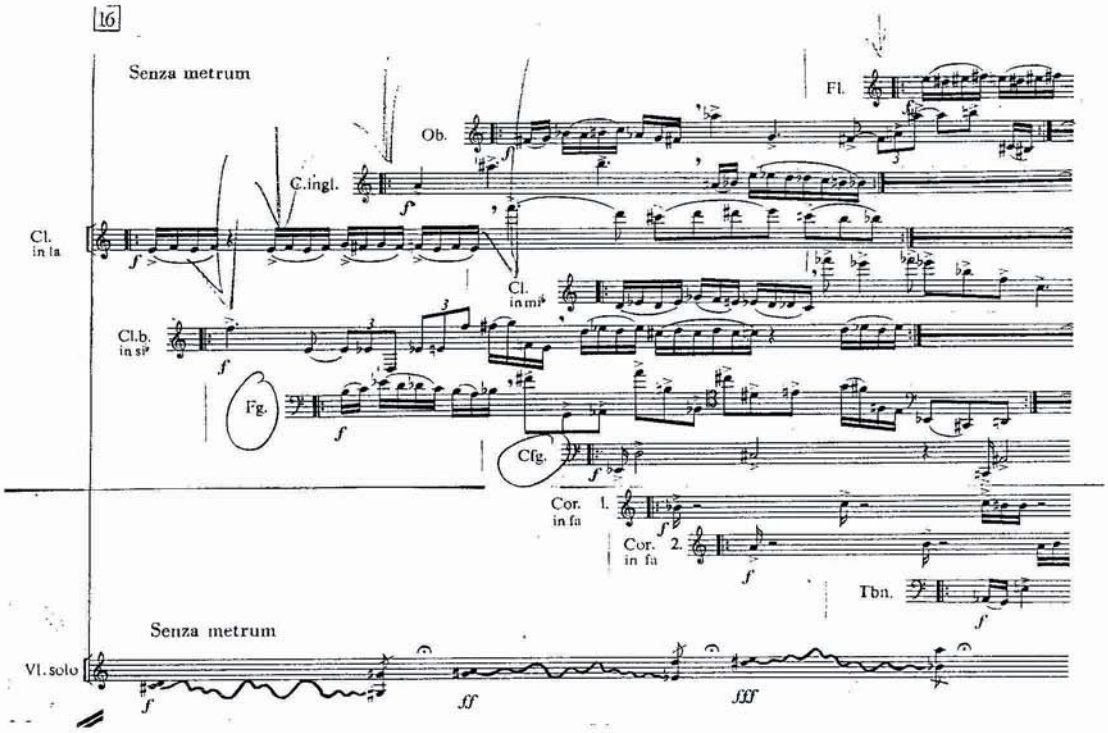
Beyond general, subliminal effects that knowledge of a composer's background can have on performance questions, there are some very specific interpretive possibilities that merit consideration. Schnittke's *Violin Concerto No. 3* poses a number of problems, subtle perhaps in comparison with the very large issues involved in the work, but which nevertheless contribute to a real sense of identity, form, and structural motion. What receives the most attention in this work are the practical playing issues: the virtuosic aspects of the solo violin writing, typified in the cadenza that opens the work (**Example 3**), the complicated imitative counterpoint between the three clarinets accompanying the solo violin in movement two (**Example 4**), and the execution of the proportional notation of the transition between movements two and three (**Example 5**). Interpretation normally involves such concerns as the non-pedantic but fluid conducting of the chant-like passages in the first (and third) movement (**Example 6**) and the Weber-like wind material that opens movement three (**Example 7**).



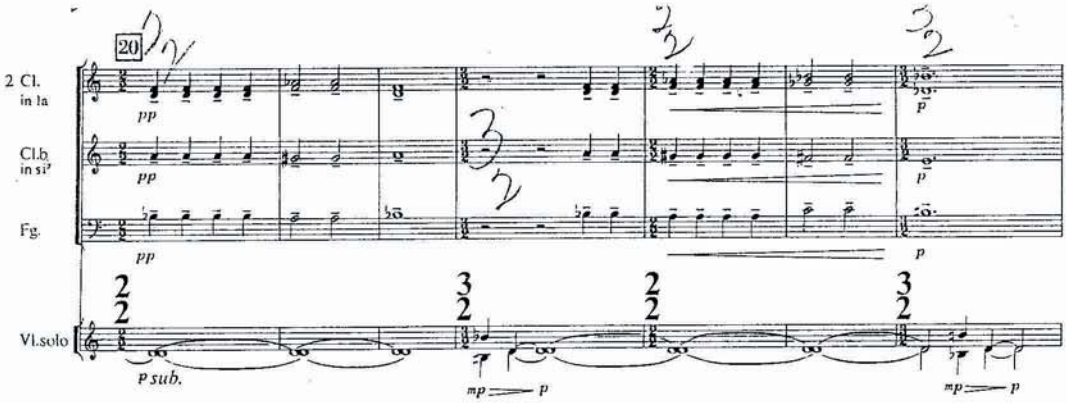
Example 3. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*, movement 1, violin cadenza.



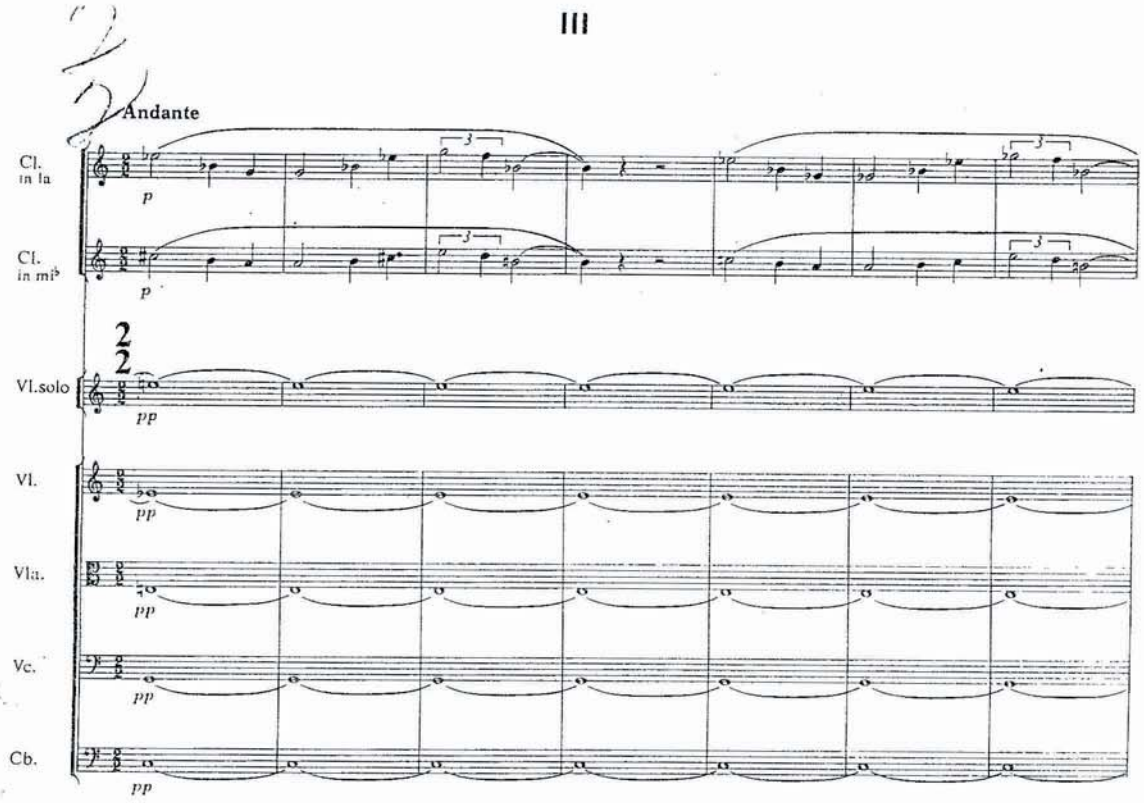
Example 4. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*, movement 2, rehearsal 7.



Example 5. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*, movement 2, transition to movement 3.



Example 6. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*: movement 1 (rehearsal 20)



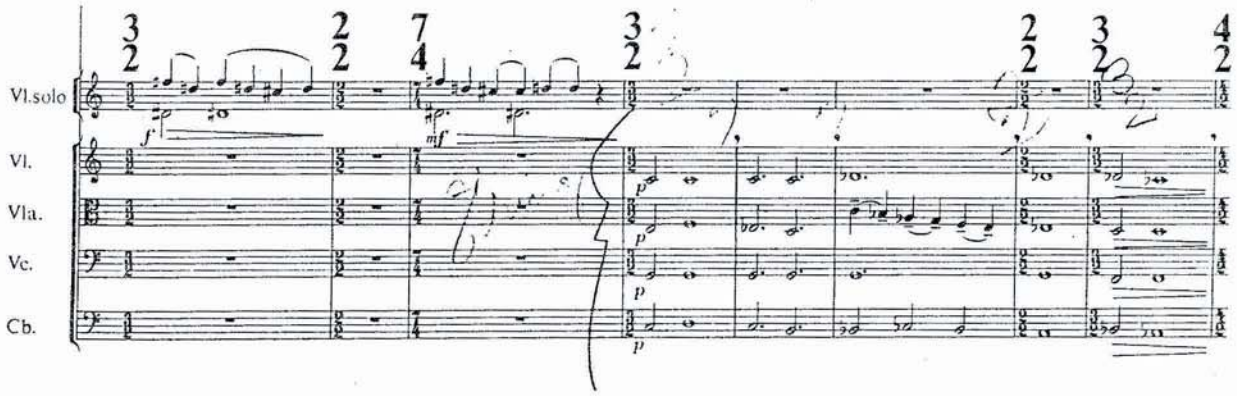
Example 7. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*, movement 3, opening.

There are two more subtle characteristics of Schnittke's *Concerto* that have a decisive impact upon sound and interpretation. The chamber orchestral accompaniment in the work is largely athematic (except for the material of **Examples 6** and **7**) and amelodic (except for scattered moments in the bass clarinet and trumpet). Homophony is the norm and the focus is very strongly on the harmonic content. The sustained chords and instrumental choices and voicings employed much of the time are reminiscent less of orchestral writing than of music for organ. Looking over the whole work, it becomes clear that the chamber orchestra functions as a collection of organ stops thrown periodically for changes in tone color. Light wind scoring creates more of a *ruckpositiv* sound while *tutti* passages resemble the full-bodied, great organ sonority. This thinking and orchestration pervades the passages described above such that the chant is an organ tone chant and the Weber-like theme appears over a pedal point. Taking this approach affects the balancing of chord voices and the general sense of sound continuity. Another result is the idiomatic (from the organ standpoint) elimination of vibrato from the wind orchestra. This has a most direct bearing on the string section.

One of the curious aspects of this work is the withholding of the strings until the last movement and then restricting the role the strings play to recapitulating wind material from movement one. This is a very serious issue in that the purely visual aspect of four string players sitting on stage **not** playing for 15 minutes is a very intense spectacle for the audience. There can be no doubt that Schnittke carefully calculated the effect of the most important section of the orchestra being initially silenced and then restrained to such an extent. Taken with the organ orchestrational characteristics of the whole and the denial of string expressivity throughout the majority of the piece, whether or not the strings should use vibrato (there is no marking either way)[7] and, if so, how much, becomes crucial. The solo violin versus organ-like, non-vibrato wind and brass ensemble demands a careful decision

regarding string vibrato in movement three, lest there be an uncharacteristic change of mood that harms the perception of the whole.

The vibrato decision is not simply an either/or issue. Certain passages, such as the descending viola line shown in **Example 8**, call for an interpretive decision about bringing out the viola appropriately without imposing dynamics or other types of expression not actually notated. Arbitrarily deciding that the tenuto marks indicate a louder dynamic or function as accents is not sufficient: there is an expressive purpose to this passage as the repetition of two earlier passages in the third movement; first in a thin texture with the oboe carrying the moving line and then in the trumpet with a much bolder texture.[8] Both earlier passages have a marked *crescendo,* showing that Schnittke deliberately avoids this means of bringing out the viola at the third bar of rehearsal 12.



Example 8. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*, movement 3, rehearsal 12.

Overall, I am compelled to resolve this problem by using virtually no vibrato in the strings in movement three. This serves the purpose of creating the smoothest possible motion into the strings from the material of previous movements. Since strings are now involved, a much more faithful kind of pedal point - one practically devoid of any cessation of sound - is possible. For example, the pitch elision necessary in the two horns in movement one is no longer necessary in the recapitulation of the same passage in movement three (**Example 9**). Given the near absence of any expressive dynamic markings , however, a complete lack of vibrato in the strings would make any kind of stratification of texture impossible. In **Example 8**, for instance, very slight vibrato in the viola, with a little expressive dynamic shaping of the descent, will bring out the line in a subtle, idiomatic manner that is compatible with what Schnittke indicates. The chant-like passages at the very end of the movement can also benefit from the addition and subtraction of very small amounts of vibrato to color the chord progressions. Interpreting the crescendi and diminuendi as a warming up of tone as much as actual increase in volume gives the passage much more emotional weight, as if expression were only to be hinted at and then denied.

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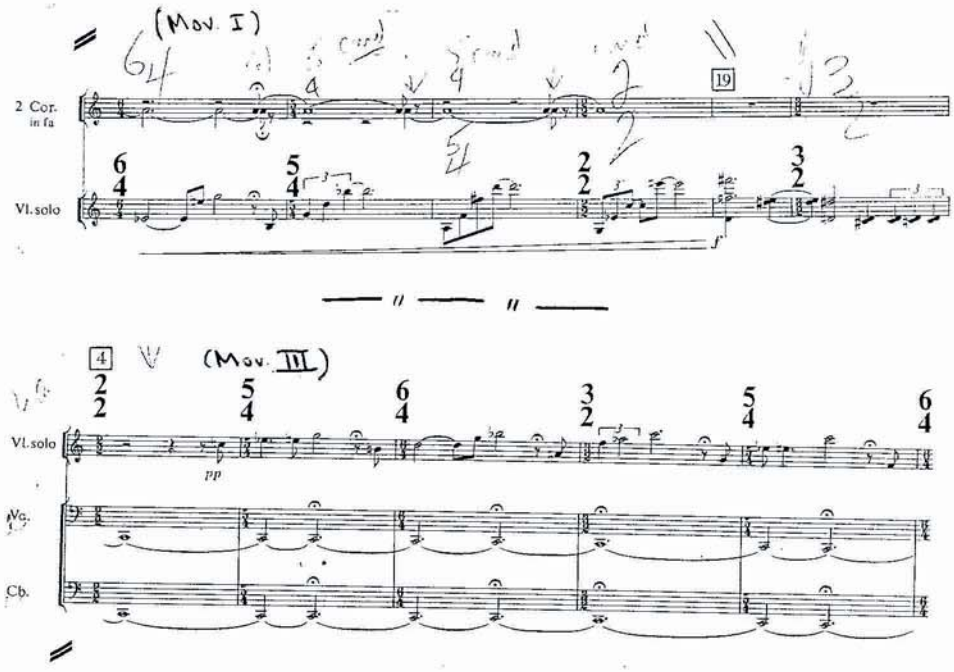
[7] In previous music where vibrato was the norm (i.e., much of 19th century string literature), of course, vibrato was never marked. Instead, vibrato was assumed, non-vibrato being the exception and therefore marked. Today more composers indicate vibrato more or less throughout their works, some, such as Xenakis, specifically calling for the absence of all vibrato in all instruments in nearly all of his music. Conventional interpretations with vibrato as the norm, then, cannot be taken for granted as being correct. The whole issue of vibrato in many works, while open regarding the composer's indications, needs to be carefully and thoroughly addressed.

[8] Oboe at three measures after 1 and then trumpet at three measures after 3.



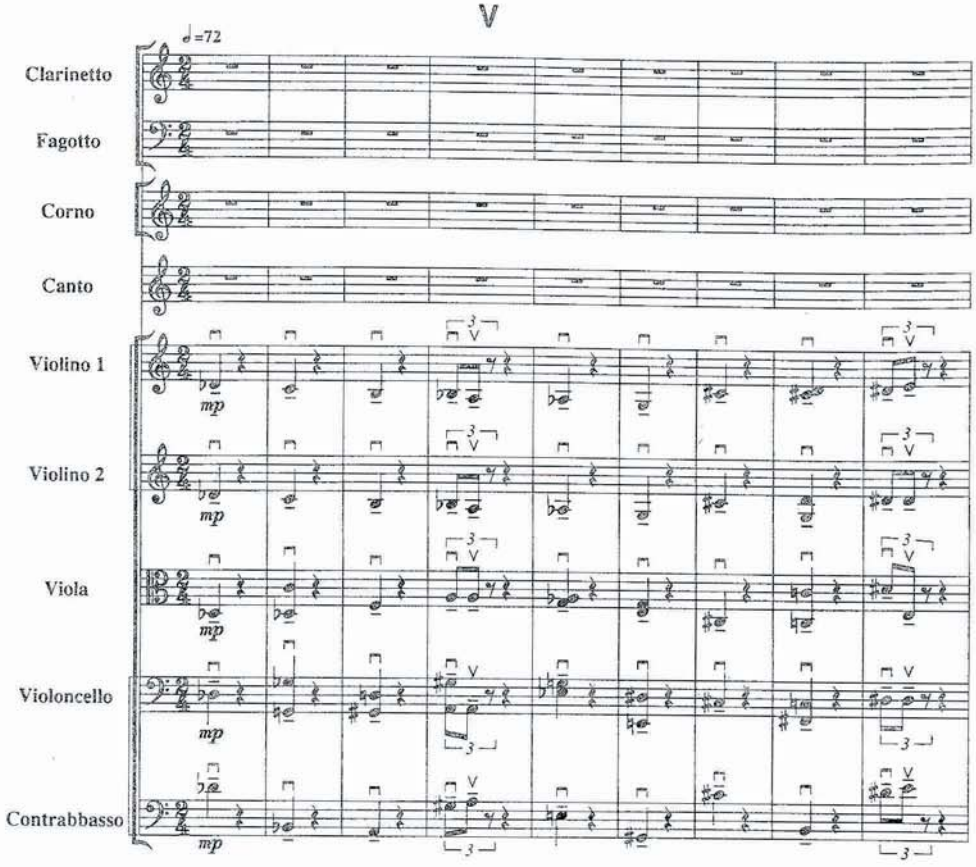
Example 9. Alfred Schnittke's *Concerto No. 3 for Violin and Chamber Orchestra*, movement 1 (5 after rehearsal 18) and movement 3 (rehearsal 4).

Possible programmatic elements may confirm this interpretation. There is a strong sense of mounting tension throughout the first two movements (which connect without pause), through the crucible of cacophony of the aleatoric transition to movement three, to a weird, tonal, and oddly banal naturalism at the beginning of the third movement. As the third movement completes the recapitulation of movement one material in the course developing its own music, a more depressed and oddly funereal mood emerges, ending with the low range chant of the strings against the extreme high register of the solo violin. Given the political commentary attached to many works of Schnittke, I don't believe that I am going too far by taking a view of his *Violin Concerto No. 3* as an intense political dialogue between a monolithic, organ-like ensemble and a fluid, angry soloist. The conclusion of the whole is a negative one, with the high range violin descending into the midst of the string texture, being held there, and then released as the string section concludes the work. I find that only a less-expressive, non-vibrato sound for the string section will convey this most unhappy, unredeemable ending.

Similar questions, especially with regard to vibrato, crop up continuously in the music of Sofia Gubaidulina. Only rarely is vibrato marked, yet it is important to decide how the vibrato situation will be resolved. The fifth movement of Gubaidulina's *Hommage á T.S. Eliot* illustrates this in a very significant way. Gubaidulina derived her text from Eliot's *Four Quartets,* the subject matter dealing with vital areas of catholic religious ritual, especially death and resurrection. The treatment of the voice involves the repetition of the first line of text ("The chill ascends from feet to knees") many times, eventually bringing in the succeeding lines of text, accompanied by increasing intensification of the instrumental texture. The string quintet has a ostinato-like passage that slowly increases in density and dynamic intensity. The three winds have a more continuous development that also has refrain elements, particularly a recurring multiphonic harmony for bassoon and clarinet with a

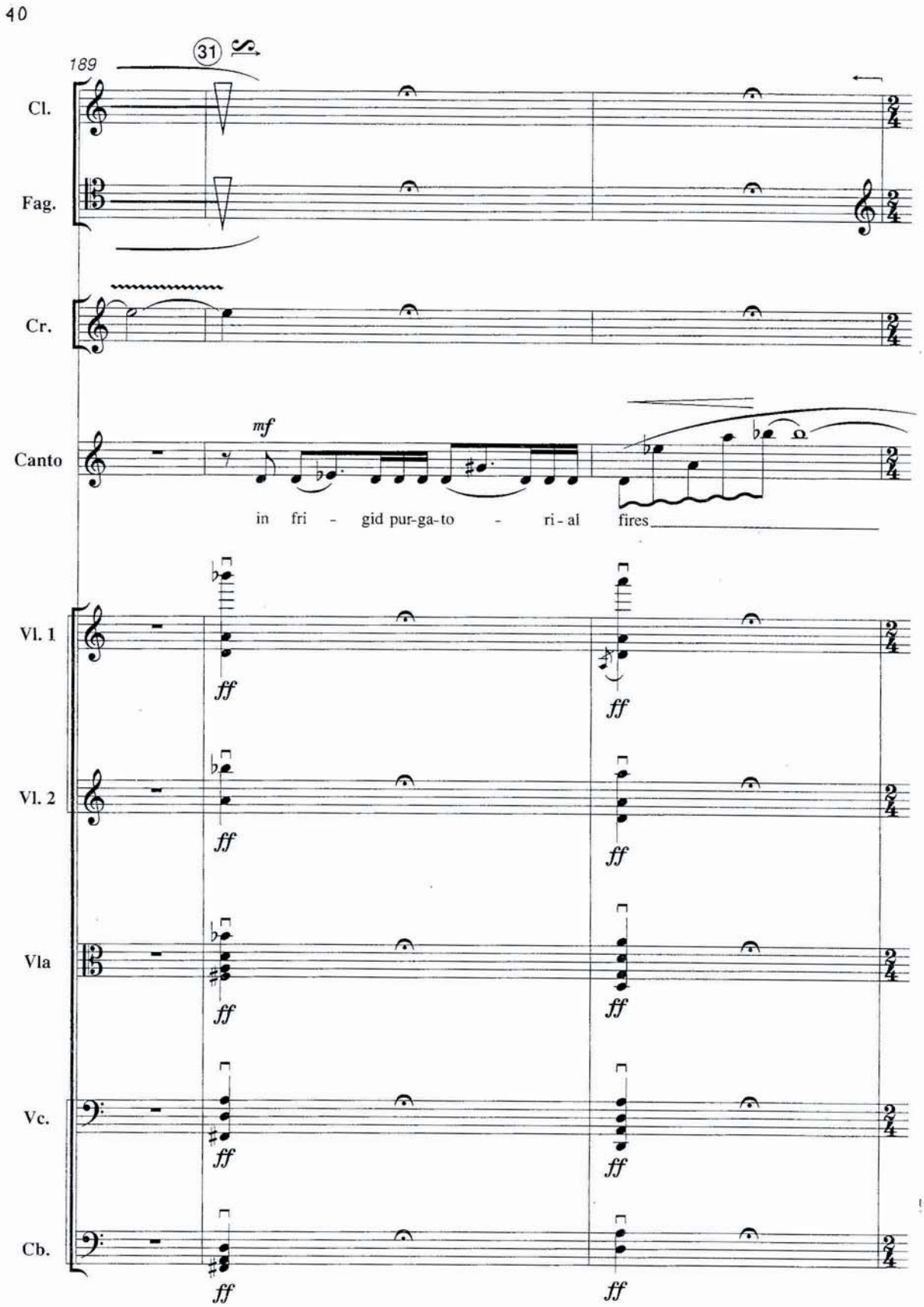
fluttertongued horn tone as well. These repetitious figures get shorter, louder, and more dense in sound until a major climax cues the termination of the instrumental texture, leaving only the solo voice.

The opening string chords (**Example 10**) and their development are the issue here. The decision to reserve vibrato for only the sustained tones of the harmony at the major point of climax (**Example 11**) is an easy one to make. The strings have a unified, plodding but inexorable quality. Vibrato would compromise the projection of this not unemotional but somehow not quite human driving and accumulating power. Furthermore, the quarter note duration of the chords make them just long enough to pose problems of vibrato coordination if vibrato is to be used. Keeping vibrato in abeyance for most of the movement simplifies the projection of harmonic clarity necessary to keep focus on the repeating chord progressions. This kind of thinking should also be followed in other movements, even the purely instrumental movements one and three.[9]



Example 10. Sofia Gubaidulina's *Hommage á T.S. Eliot*, movement 5, mm.1-9.

[9] Interestingly, and also supporting the position taken here, Gubaidulina calls for vibrato specifically in violin and cello in movement six. While she does not exclude vibrato elsewhere, this specific inclusion is at least a hint to the conductor and players that vibrato decisions must be made with care and justified musically, not automatically assumed.



Example 11. Sofia Gubaidulina's *Hommage á T.S. Eliot*, movement 5, mm.189-191.

While programmatic justification from the text assists us in *Hommage,* the same issues, however - repeating string patterns that shorten, thicken, and intensify - crop up throughout Gubaidulina's string music, whether texted or not. Her *Meditation über "Vor deinen Thron tret ich hiermit" von J.S. Bach* for string quintet and harpsichord raises many of the same issues. The *Meditation* is a double set of variations: one set on motives that coalesce in the opening string material of the piece, the other on the chorale tune - not the chorale prelude - used by J.S. Bach in the work he was composing at his death. The interaction of these materials is prgrammatic, creating a religious commentary between the development of the more expressive, more human material and the objective, highly distanced treatment of the chorale tune. Vibrato is most appropriate in Gubaidulina's own music and not in the music associated with Bach, in which, historically, vibrato was, at most, ornamental (SADIE, ed., 1984, v.3, p.722-723). Further, in the context of Gubaidulina's opposition of material, an austere, other-worldly quality is best associated with the absence of vibrato as the normal playing style. This, in any case, is an approach that I believe best represents and articulates the growing conflict between those variation designs.

Another issue in *Meditation* concerns a rather knotty problem that, while solvable through repetition and rehearsal, is nevertheless somewhat different from non-intuitive models previously discussed in my paper. **Example 12** shows the texture in question: A 3/2 pattern in cello and double bass having a superimposed 9/4 pattern *col legno battuto* in violins and viola in the same time with a freely conceived harpsichord part. The problem is how to convey the poly-rhythm to the performers with minimum confusion as to beat location, thereby keeping the unison rhythm of each string gesture precise. Although not essential, a conductor clearly is a great help. At first glance, it may appear quite possible simply to think or conduct the half-note beat with the lower strings thinking duplets and the upper strings triplets. While possible, this can be inordinately time-consuming: after all, the *col legno* in violins and viola must be absolutely synchronous or the sound will be hideously thin and uncoordinated. Worse, the projection of pitch so necessary to bring out the chorale tune in the upper strings, so seldom demanded in *col legno* passages in recent music,[10] demands complete accuracy and consistency not only of attack but in the numbers of ricochets for each stroke. This situation is aggravated by the slow, quarter = 66 tempo. The best way to deal with this passage is to let go of the much easier lower strings, conducting each quarter note beat of the 9/4 (emphasizing the attack points) and getting the lower strings to simply play two beats against the conductor's three. If each one of the three large subdivisions of the 9/4 are carefully located by the conductor, the lower strings can quickly fall into place since they will be able to see the 3 strong beats of their 3/2 meter. The harpsichord, similarly, can fit in easily and freely within the 3/2.[11] This rather fundamental approach has ramifications for similar conducted situations in, for example, the music of Elliott Carter.

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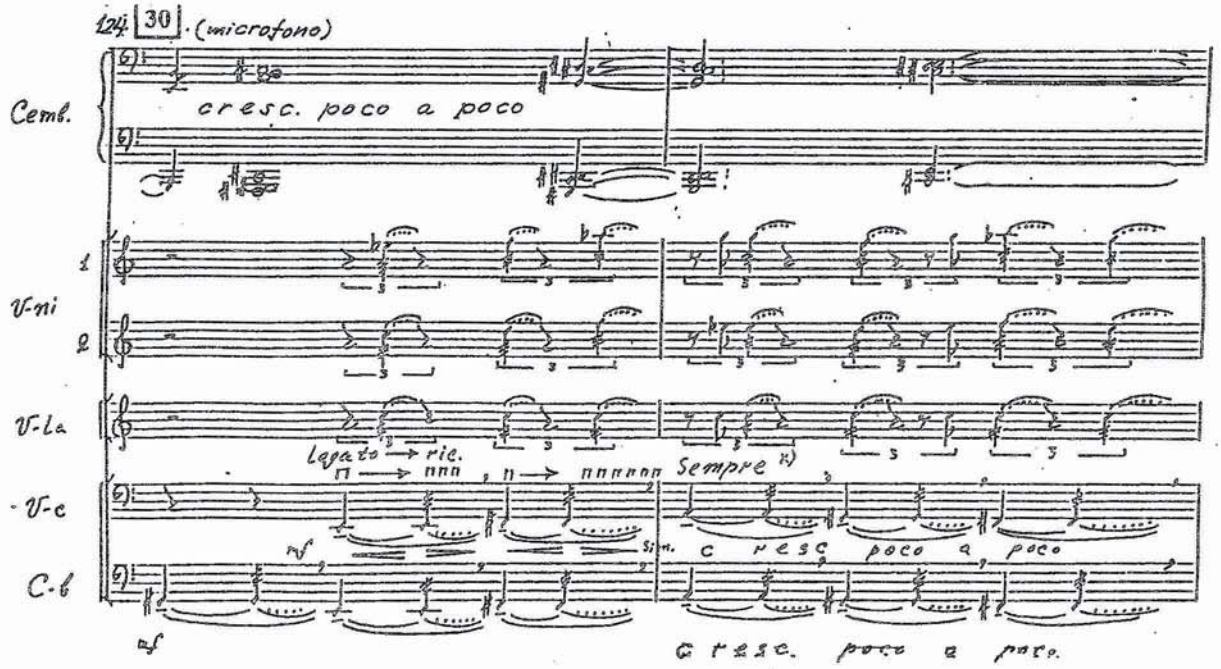
[10] Compare this with the relatively un-pitched sound of a lot of col legno battuto in the *Five Movements for String Quartet* by Anton Webern, particularly in the first movement.

[11] If no conductor is used, one of the upper strings will have to cue the 9/4 attacks and one of the lower strings will cue the 3/2 rhythm. The harpsichordist will have to attend to one or the other leader, probably the lower strings. While still the best way to deal with this texture, the rehearsal time to "get" the passage will be considerably prolonged.



Example 12. Sofia Gubaidulina's *Meditation über "Vor deinen Thron tret ich hiermit" von J.S. Bach*, rehearsal 30.

Some interpretive decisions are more subtle, abstract, and may be, in fact, inaudible to the audience. They nevertheless can make a huge difference if not made or if music is taken strictly at face value. A most interesting case occurs in one of the masterpieces of recent chamber/vocal literature, *Three Settings of Celan* by Sir Harrison Birtwistle. In the second song, a lengthy passage (measures 12-24) involving harmonics in cello and contrabass occurs (**Example 13**).[12] The cello is clearly written in artificial harmonics; the contrabass, just as clearly, is written in implied natural harmonics. The cello's artificial harmonics are relatively easy of execution, despite involving *sul ponticello* bowing.[13] If the contrabass plays all natural harmonics, however, several severe problems arise. The timbre of each harmonic will be different, some quite radically so, depending on the instrument being used. Some will be far less in-tune or much louder than others. Getting all of them to speak will not be easy, and this is before addressing the probability of actually hitting all of the right nodes. Obviously, a very fine player must be used for the part but even a very excellent player will have considerable technical difficulty in making this passage relatively comfortable and predictable in performance. Finally, the harmonics in cello and bass are vital to the melodic and harmonic structure of the passage. They weave in and out of each other, interacting with the viola pitches as well. In that the clarinets also interact directly with the strings and voice notes, the right notes in correct intonation are absolutely essential in the contrabass. The solution to make the passage not merely more playable but more faithful to the music is to use artificial harmonics in the contrabass from

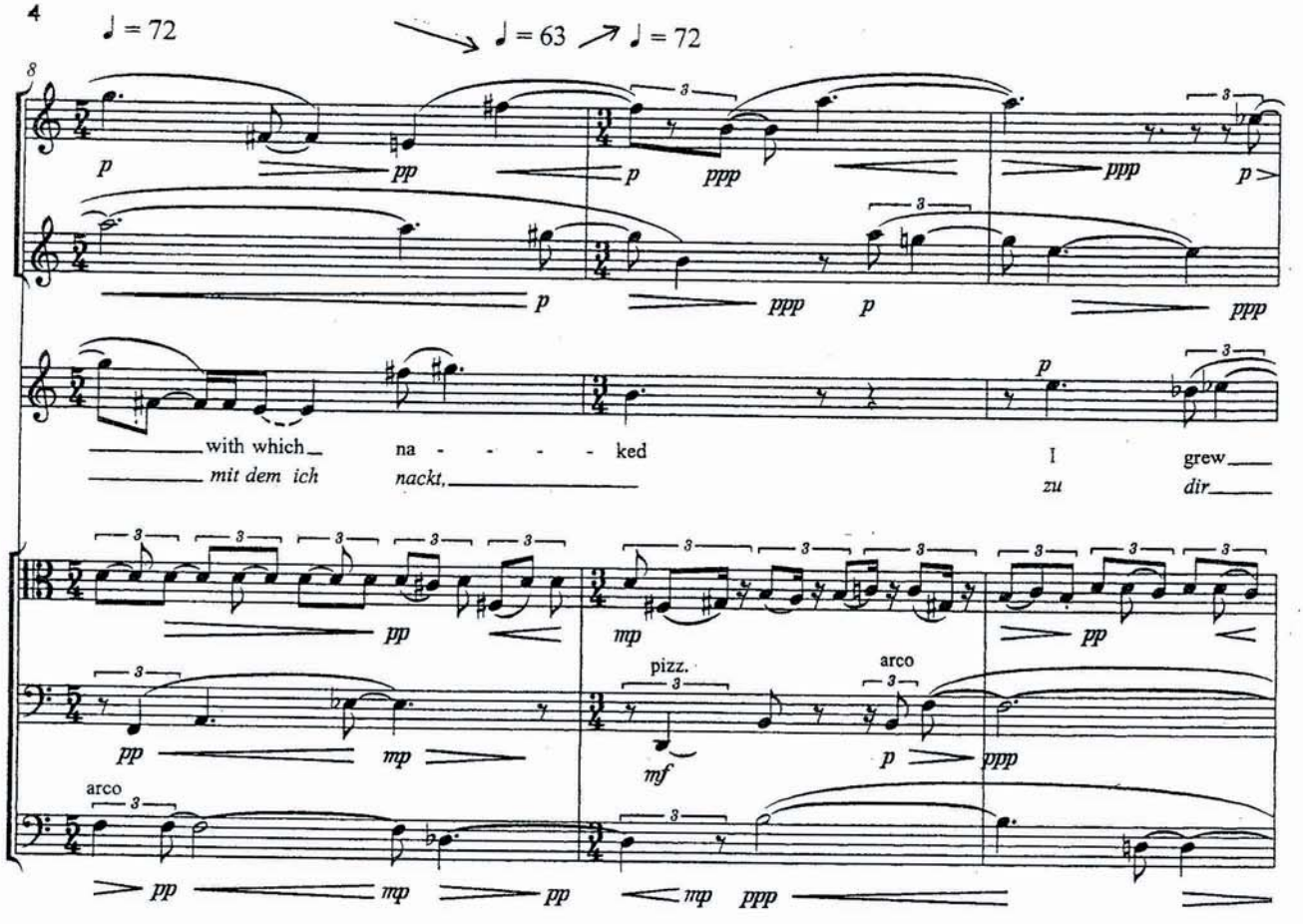
[12] The notation *pos. nat.*, obviously, does not refer to the type of harmonic to be used but, rather, the use of sul ponticello or normale bowing.

[13] Magnitude of sul ponticello is a factor in that the performer cannot be right on top of the bridge or pitch, clearly a vital factor for reasons cited below, will risk being lost.

measure 15 to the B natural in measure 24. Artificial harmonics used to be considered either impossible or impractical on the contrabass, and that may account for Birtwistle not calling for them specifically here. I cannot imagine a balanced, controlled rendition of the passage without them, and balance and control are what this passage is all about. The solution proposed, then, is not a technical stop-gap to save time (although it will save a lot of time and probably fruitless effort) but an interpretive decision to bring a passage off to best advantage.

Example 13. Harrison Birtwistle´s *Three Settings of Celan*, "Night", mm.16-21.

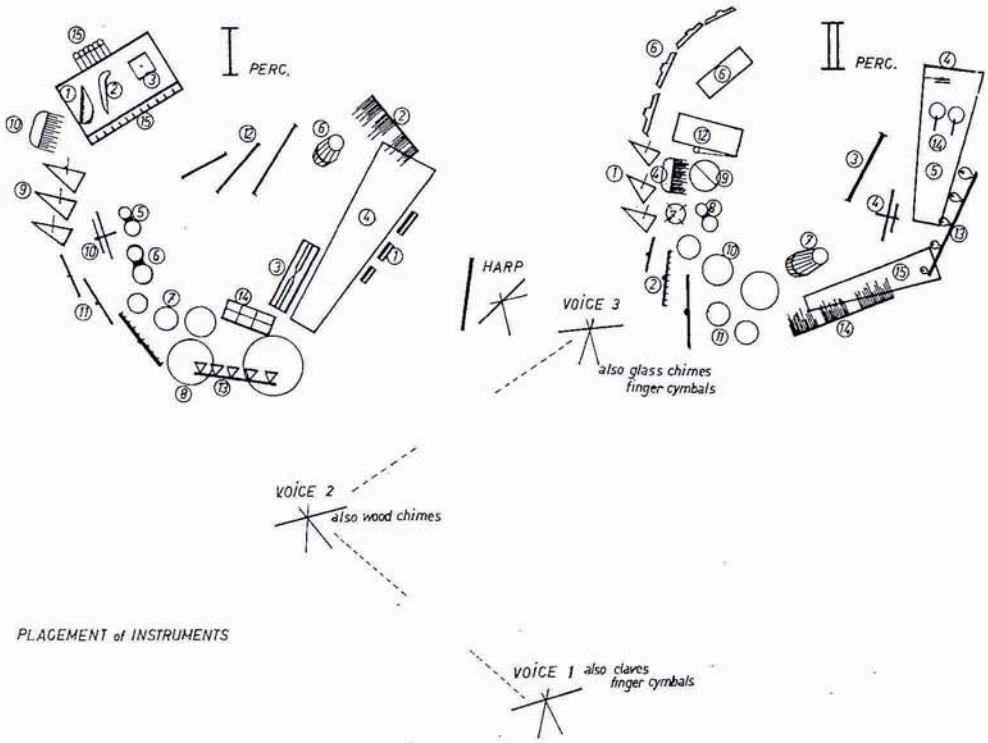
Three Settings of Celan also presents some performance problems of the type that appear in *Le Marteau sans Maître.* The tempo fluidity in the former work adds another layer of difficulty to an already highly complex texture **(Example 14)**. Tempo fluctuates constantly and gradually from one measure to the next throughout movements one and three by as much as 28 mm in the first movement and 42 mm in the second. Clearly, a conductor is called for since the voice cannot act as soloist and conductor simultaneously, and no other instrument would be in a position to do this either. Each movement, then, must be rehearsed initially at a median tempo, working in the tempo fluctuations gradually. Rehearsal of the tempi should aim for player comfort through maximum flexibility, rehearsing quite differently at times to insure that the players are able to adjust to this marked *rubato* with ease and with spontaneity. The more exposure performers have to this kind of composer-controlled *rubato,* the easier it may be for them to adapt to the same kind of tempo problems in music of greater technical difficulty. The concept of floating tempi of this type certainly is a significant factor in a great deal of the music of the past 50 years.



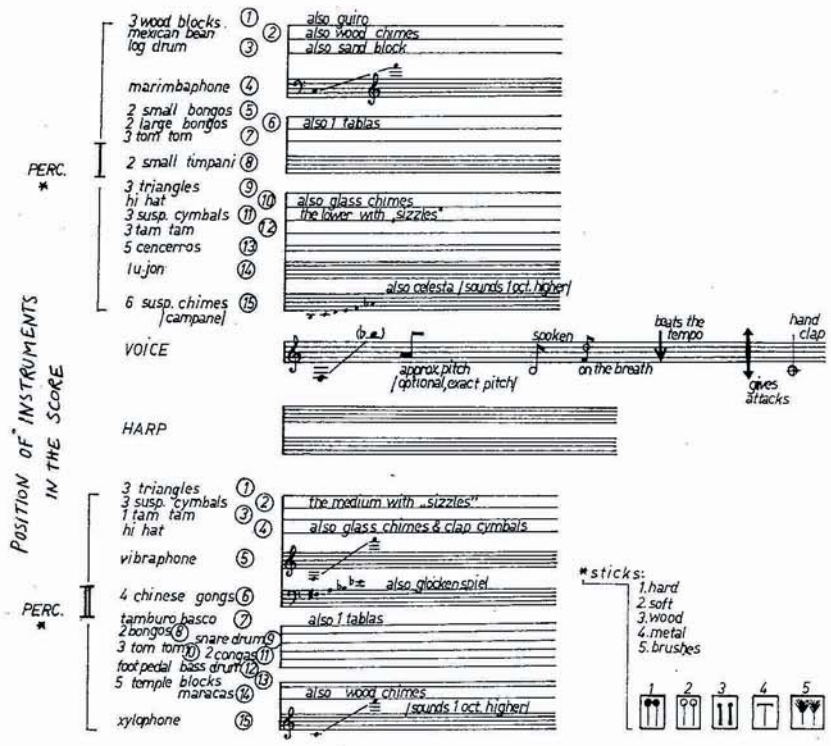
Example 14. Harrison Birtwistle´s *Three Settings of Celan*, "White and Light", mm.8-10.

Notational experiments and innovations have, of course, been a consistent feature of music since the Second World War and, if the works of Charles Ives are included, even earlier. A background aesthetic existed for many of these innovations, such as in the case of aleatoric music which involved a distinct questioning of what music signification is and what music ought to be. Concerns of that type are not germane to this study. I am more interested in the consolidated, successful norms from all notational experiments that have been more or less accepted as typical of a great deal of music. Many works, considered fussy or even impenetrable at first glance at the notation have proven themselves to be far more successful than if written in more conventional ways. While some new notations may communicate better than others, the composer who uses innovative means to present or notate a work intentionally presents performers with a musical problem that will inspire them to think about a piece in a new, or at least different, way.

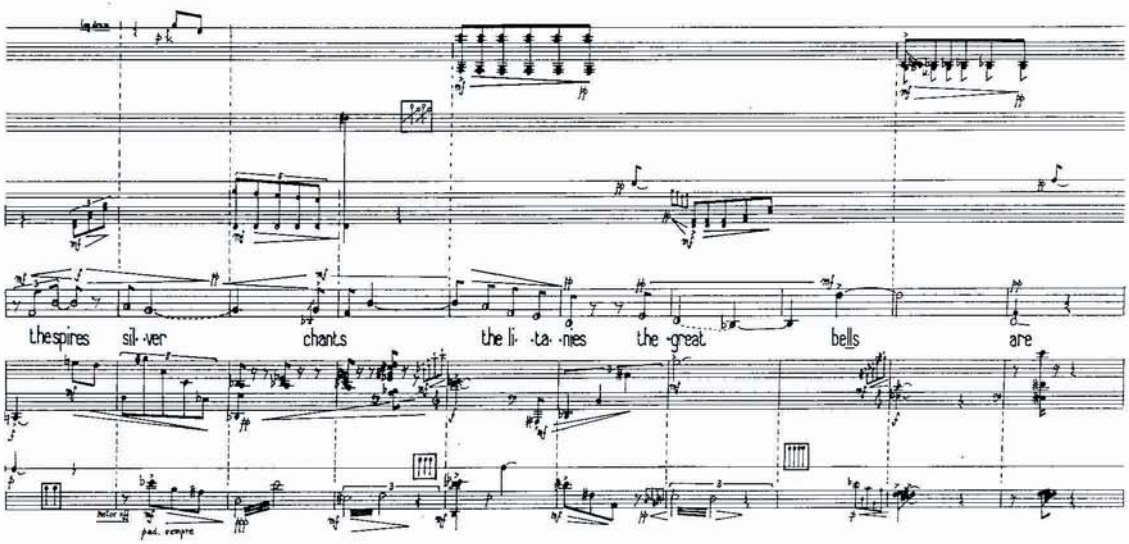
Several older works exerted considerable influence on the course of new notational inventions. Apart from the striking but eminently practical string scores of Krzysztof Penderecki, the most significant embodiment of the many break-throughs in notation after 1950 was Luciano Berio's *Circles* for soprano, harp, and two percussionists. As with numerous other works written at the time, all performers read from identical full scores. The mixture of precise, metered music and proportional notation succeeded in creating complex textures that were not unduly difficult to perform. Boxed combinations of instruments or pitches to be played in any order worked very well in establishing malleable but sonically stable sonorities. The score of *Circles* still baffles many conductors, however, because of the way the percussion instruments are arranged on the upper and lower staff group (**Example 15**). This is aggravated by the fact that the percussion instruments are not identified on each page, nor are the percussion staff groups complete, but are optimized to save space. The notation is, however, uncumbersome for the **players** and is notated for their ease of reading, not the casual score-reader. The circles of the title refers to the circular arrangement of percussion instruments for each player, the instruments set up as much for ease of sticking as for the logical consistency of instrument type (**Example 16**). The players alternately whirl around the set up or focus on a single area, creating a visual logic of carefully calculated precision. The score arrangement corresponds exactly to this kind of thinking and, somewhat surprisingly, makes for very rapid score comprehension and playing (compare **Example 16** and **17**). Although frequently performed with a conductor, the rapidity with which percussionists usually grasp the logic of the situation shows that the conductor can be dispensed with as far as they are concerned.



Example 15. Luciano Berio's *Circles* for soprano, harp, and two percussionists: placement of instruments.



Example 16. Luciano Berio's *Circles* for soprano, harp, and two percussionists: position of instruments in the score.



Example 17. Luciano Berio's *Circles* for soprano, harp, and two percussionists: p.30.

As stated above, Berio was not the first composer to arrange music in this way, although he was one of few to be highly sensitive to the relationship between the percussionists choreography of their movements and the arrangement of instruments on the score.[14] Unfortunately, many composers attempted to solve conceptual and ensemble problems by simply foregoing parts entirely, requiring all players to use a full score whether proportional notation was used or not.[15] Owing to this questionable practice, a prejudice exists for many conductors against any work that uses the full score format. While there is justification for this view, there are equally a number of composers for whom score appearance, usually necessitating reading from score in performance, has formed a highly successful part of their musical style and compositional identity. What must have seemed initially as *Augenmusik,* pure and simple, turned out to be effective creations of a contextual mindset for performers.

Several examples of apparent notational "eye candy" come to mind. Sir Peter Maxwell Davies's celebrated *Eight Songs for a Mad King,* contains many unusual notational features, although the majority of the piece is organized more-or-less conventionally. The third song - the famous bird-cage score - is a notable exception and is probably the most well-known page of score from the late 1960's **(Example 18)**.

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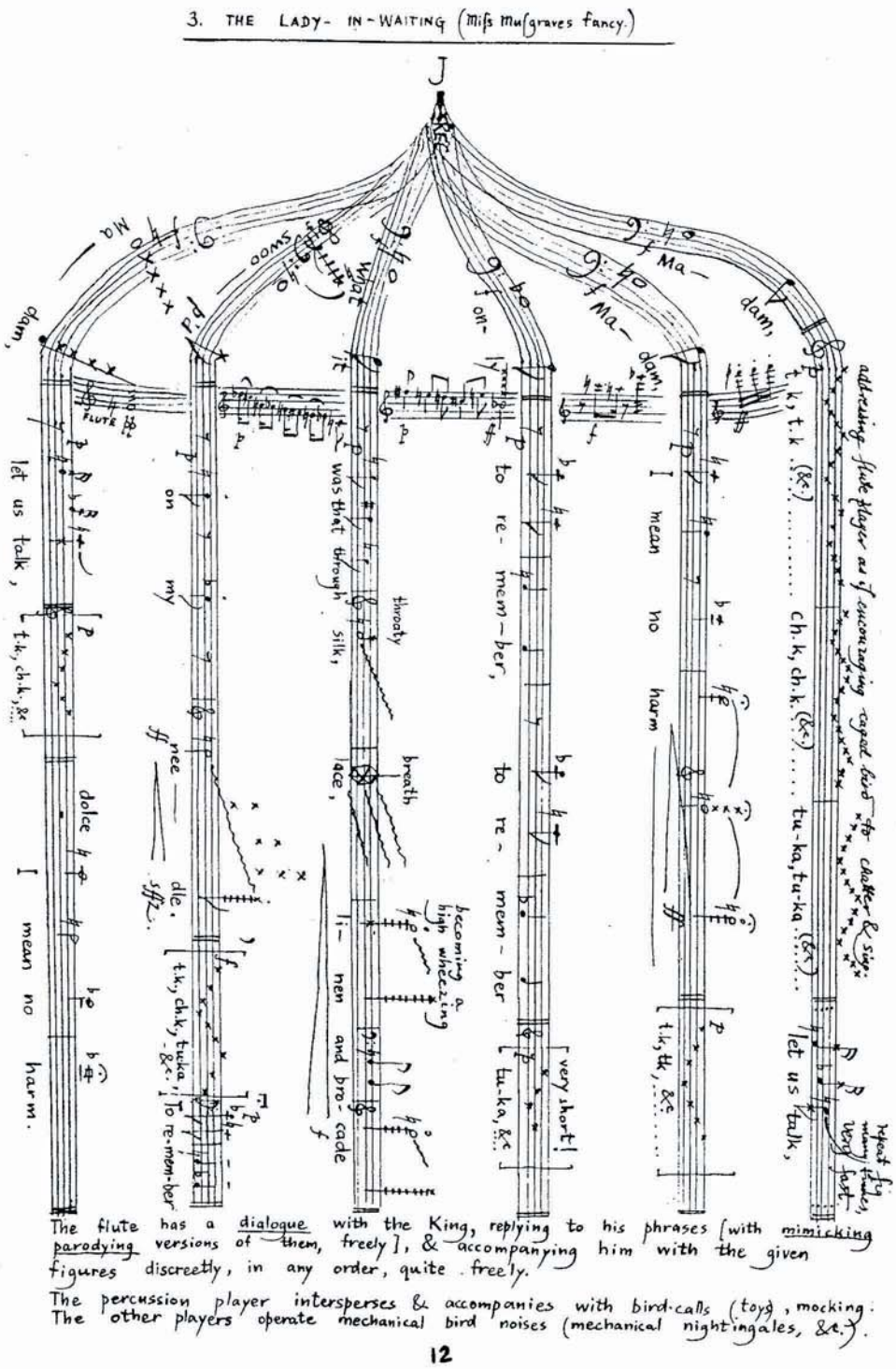
[14] Other works, written either earlier or at around the same time, using the same general appearance include *Refrain* and *Kontakte* by Karlheinz Stockhausen, *Éclat* by Pierre Boulez, and many works by Mauricio Kagel and Bruno Maderna.

[15] A notable exception are the very fine parts for Maxwell Davies's *Eight Songs for a Mad King,* where, despite the problems the score presents, no part is longer than seven pages and quite easy to negotiate. Witold Lutoslawski also used parts in music that was largely proportional in the score, quite effectively setting up number cues that could be followed in the same manner as measure numbers. The larger the number of cues, the more difficult to keep one's place, however, as anyone who has conducted *Chain 1* and then dealt with the hundreds of cues in the *Cello Concerto* (and other works of similar length) will have discovered! Penderecki uses rehearsal numbers or letters with similar success in his parts.



Example 18. Sir Peter Maxwell Davies's *Eight Songs for a Mad King*, Song 3, p.12.

There is no absolute need to notate this fairly simple strophic variation set between flute and voice in this manner, a more conventional blend of metered and proportional notation being quite possible. But what better way to communicate a concept to all of the players than this mannered notation, evoking the early 15th century Avignon school,[16] while presenting one of the main metaphors of the theatrical bases of the piece - that of imprisoned birds whom the mad king is teaching to sing. The approach is also very condensed, getting an entire song onto a single page of manuscript, making it a viable and quick way to get the song across to the players.[17]

George Crumb presents one of the most striking examples of a composer who seems as fascinated by the visual appearance of his music as by its sound. Anyone glancing at any of his mature works, especially *Makrokosmos* for piano solo, *Eleven Echoes of Autumn,* and *Ancient Voices of Children* could think that Baude Cordier had come back to life. Despite copious instructions from the composer, preparing these scores for performance used to seem a forbidding task. While Crumb's predilection for unusual instruments and unconventional performing techniques on traditional instruments still pose technical problems that must be carefully rehearsed, the main impediment to comprehending his intentions often was his unusual score configurations. Combined with his penchant for using no rhythmic values longer than the eighth note - most often using 32nd, 64th, and even 128th note values as subdivisions - the visual appearance of a page of his music can be psychologically somewhat frustrating. **Example 19**, the Dance of the Sacred Life Cycle that follows the third song of *Ancient Voices of Children,* illustrates a number of these complexities. The entire second system on the page comprises a five minute unit that is read both left to right and in a circular manner. After the introductory piano and percussion passage, the *bolero* rhythm of the percussion inaugurates a series of gestures to be performed sequentially by letter around the axis of the center of the page: A1, B1, C1, D1, E1, A2, B2, etc., while the *bolero* rhythm makes a crescendo that peaks and then recedes at around B2. No matter how confusing this might appear, it is really an ingenious way of getting a lot of music onto one page. I have found that the amount of time required to get all performers to execute this dance correctly is minimal; in fact, twice through is sufficient to get everyone in their proper positions temporally, leaving plenty of time for polishing the shape of the whole. All of the notational quirks on the page could, of course, be fully and accurately written out in conventional notation using no subdivision of the beat smaller than the eighth note triplet. This would have consumed probably seven to eight pages of score and eliminated a lot of the natural pacing and rubato that occurs in live performance. Placed in context, the whole work is almost 30 minutes long and is played from a full score that is only eight pages total in length. I would say that the notation, far from inhibiting performance, facilitates the effective presentation of the work while also making the players think very differently about the music and their roles in it - something that could not have necessarily been said about much of the mannered music of the Avignon school. Moreover, I find that the stability and predictability of performance of this and all works by Crumb tends to be equal or greater than works written in very precise notation.

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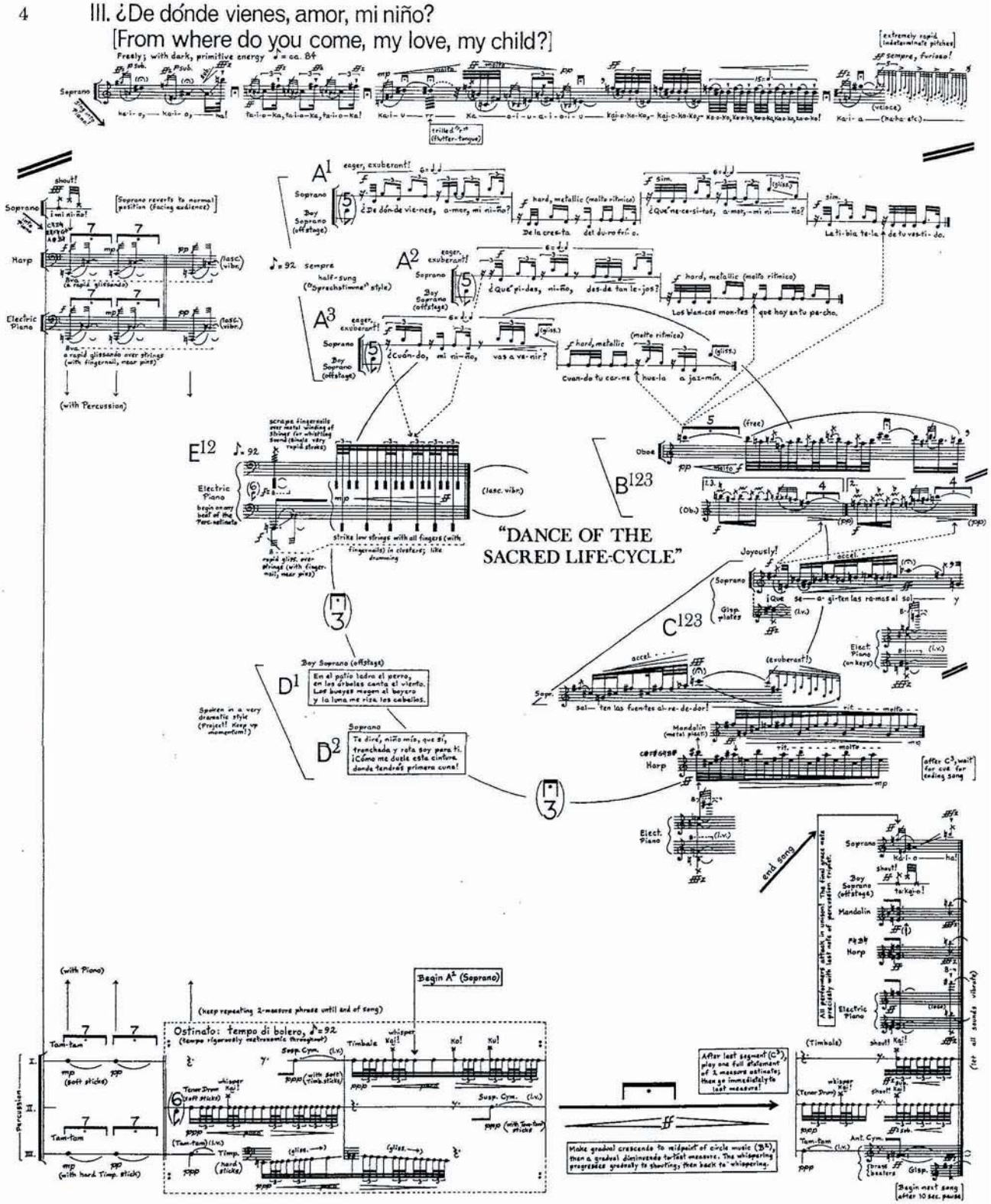
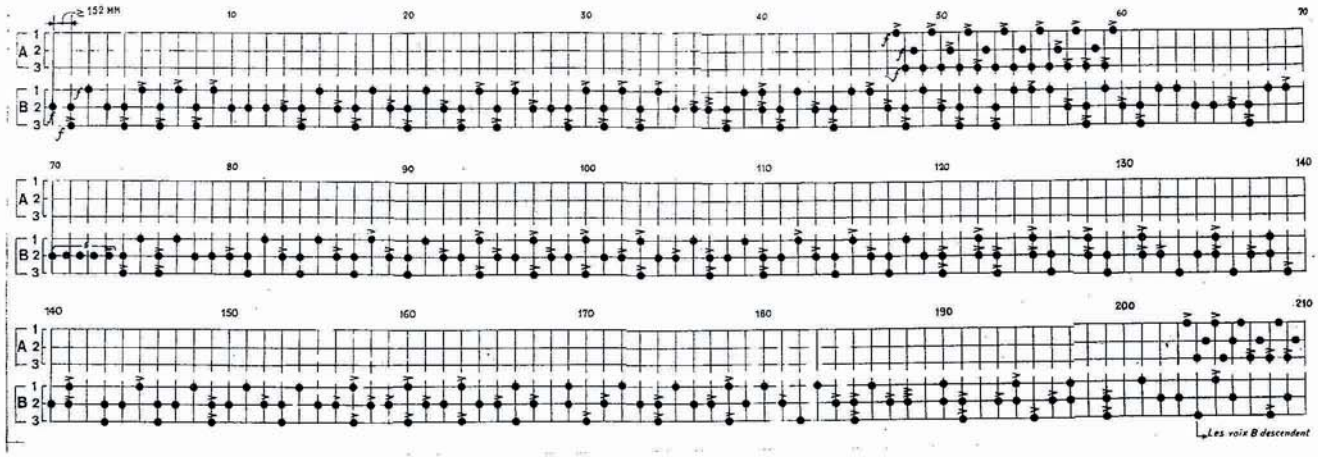
[16] I refer especially, of course, to the compositions of Baude Cordier and the heart and other shapes in which his score paper was designed.

[17] The last song is also unconventionally notated, involving the horizontal presentation of repeating phrases for all instruments (except violin) that enter in conjunction with specific phrases in the text recitation.



Example 19. George Crumb´s *Ancient Voices of Children*, Dance of the Sacred Life Cycle, p.4.

A final and curious example of notational challenge is the famous and forbiddingly difficult percussion solo *Psappha* by Iannis Xenakis, a passage of which is presented in **Example 20**. Notation in this work represents an exception to Xenakis's normal use of standard notational procedures in his compositions before and since *Psappha. Psappha* would have been especially viable in conventional notation since it is devoid of any unusual subdivisions of the beat, unlike many other works by Xenakis that employ constant and devilishly complicated polyrhythms.[18] Here, however, rhythm is a function of points drawn in identical blocks and controlled by changes in marked tempi. The use of notational identity for all sounds, with no beams or stems to indicate visual durational differences (the absence of sound being communicated in a similar manner using empty blocks) makes reading the score very difficult. Xenakis's notation prevents the soloist from taking in large passages at a glance, forcing a close examination of each group of sounds and silences. When the notational signs are fully understood by the player, the considerable technical performance difficulties in the piece reveal themselves. There is, in fact, only one way to play the work at all and that is from memory. This is a great performance limitation deliberately created by the choice of notation and, as one imposed by the composer, hard to question and perhaps easy to understand.



Example 20. Iannis Xenakis's *Psappha*, p.1.

I now want to turn my attention to the increasing use of what have usually been referred to as special instrumental effects. The history of music is filled with new performing procedures and the new sounds these create, as evidenced in any number of ways. Some string techniques *(col legno, sul ponticello,* etc.) have a provenance no later than the early Baroque era,[19] not to mention new technical approaches that crop up throughout history (harmonic glissandi, combinations of bowing techniques, etc.). Contemporary composers, not surprisingly, also take this route in either enriching conventional sound sources or, in some cases, seeking an entirely new kind of acoustically produced ensemble sound mixture. The extremes to which composers now freely go, though, surpasses the instrumental exploration of any previous era.

[18] There is no question that *Psappha* could have been notated conventionally, reducing the preparation time of the work literally by weeks, months in some cases.

[19] The uses of *col legno* and *sul ponticello* in the Baroque were, however, unusual and often programmatic, not becoming a fundamental part of thematic thinking in music until trelatively recently. Carlo Farina's *Capriccio stravagante* of 1627, a very remarkable work for it's time, is quite exceptional.

Works previously mentioned draw upon unusual instruments or adapt instruments indigenous to other cultures to their musical purposes. Crumb, for example, uses a musical saw, chromatic harmonica, toy piano, singing percussionists, and bottleneck playing style on the mandolin in *Ancient Voices of Children;* he also calls for Tibetan Prayer stones and banjo in *Night of the Four Moons.* Maxwell Davies uses penny whistles, tin cans, and a didjeridu in *Eight Songs for a Mad King.* The real problem here is simply one of adaptation by one or more of the players (usually the percussionists), the only other issue being actually obtaining the instrument required - not always an easy task in the case of the didjeridu or musical saw. Mercifully, the parts are quite easy and unidiomatic to a considerable degree, a general sound effect being desired in a purely local situation rather than a real exploration of the instrument. Of much greater concern are unconventional playing techniques called for on conventional instruments, where a player may have to overcome their own pedagogy and training to a considerable extent in order to attain the desired sounds.

The rise of interest in literal dramatic performance as an amplification of the song cycle has lead to an increasing, and pedagogically controversial, interest in expanded vocal sounds. Certainly, the combination *sprechstimme* and sung tones in Schoenberg's *Pierrot Lunaire* in 1913 anticipates and stimulates these developments. While a number of radical choral groups and performance artists have worked in this area,[20] the most influential composers experimenting with voice have been Birtwistle, in his opera *Punch and Judy* and Maxwell Davies, primarily in his music theatre works *Eight Songs for a Mad King, Miss Donnithorne's Maggot,* and *Missa super L'homme Armé.* Maxwell Davies literally set the voice world on its head with his *Eight Songs* . Vocal multiphonics, extreme falsetto, spoken words, and inarticulate noises are the norm in this work, mostly notated with a striking combination of flexibility and precision of sound. **Example 21** shows a selection of these techniques that appear with the entrance of King George in the first song.[21] Written for Roy Hart, who was capable of producing all multiphonics written with, reputedly, great precision, questions arise over the necessity of absolute accuracy of all of the sounds (can they be approximated flexibly?) and the actual safety of some of the effects for the performer's voice. The first question is answered clearly by the recording made by the actor Julius Eastman and the Fires of London under Maxwell Davies's direction, where Eastman, in a very successful rendition, makes adaptations if necessary and executes multiphonics in acceptable proximity to the notation. The latter question is usually answered by not using a conventionally trained singer, opting instead for an actor or, in some very questionable performances, a composer/performer with no real vocal experience. I have conducted many performances of the work always using a trained bass-baritone with stage experience. The emotional power of the sung portions exceeds what can be obtained with any other type of performer. With careful practice in the relaxation of the vocal chords, successful and convincing performance of the multiphonics is possible without doing damage to the voice through excessive frying of them.[22]

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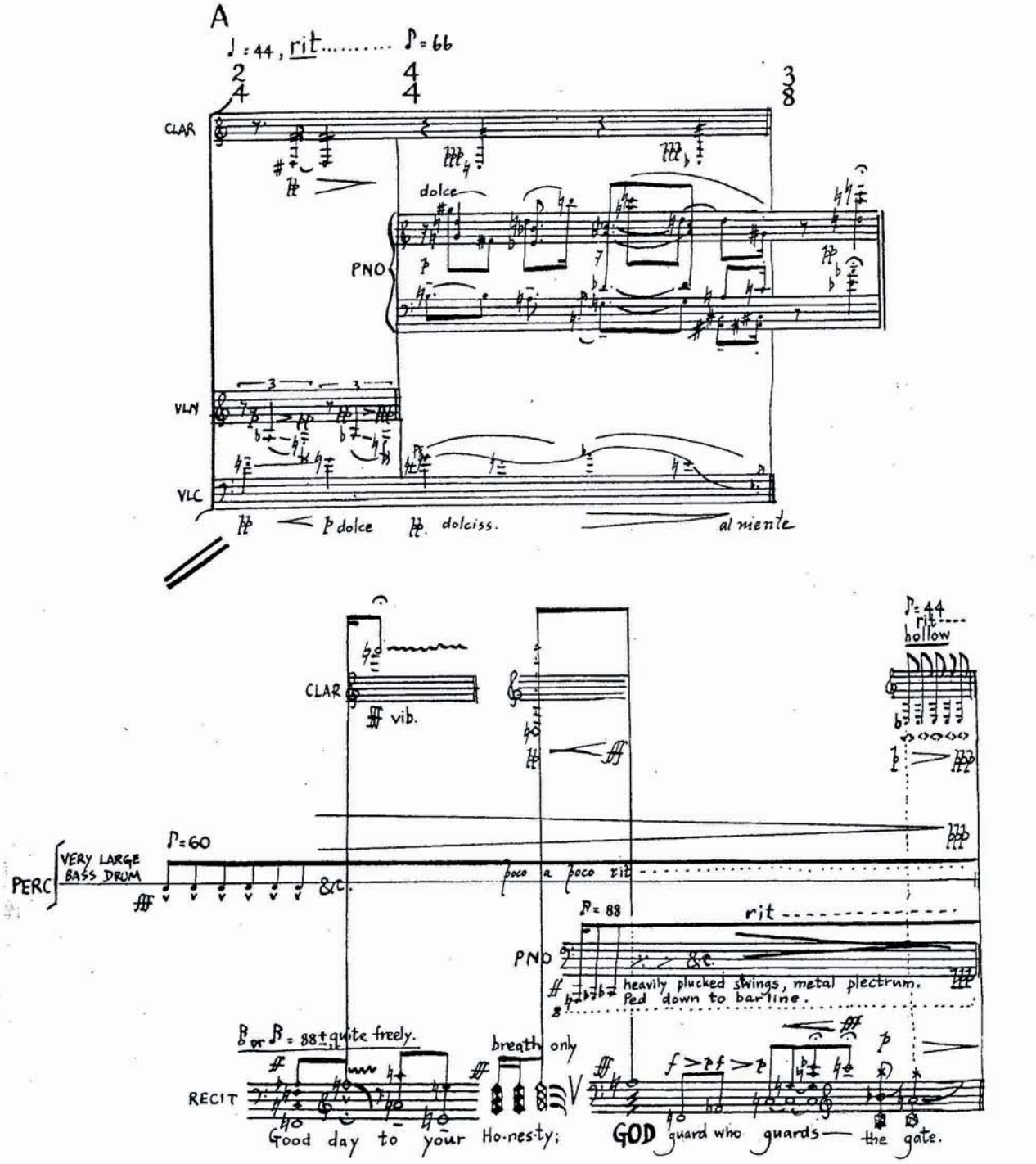
[20] Grand Union, the now-defunct choral group from Los Angeles, and composer-performer Joan LaBarbara come immediately to mind.

[21] An issue relating more to notation concerns whether the vocal sounds Maxwell Davies has indicated can be read without recourse to a recorded or live demonstration in some manner. Some type of unusual vocal sound is requested by the multiphonic notation (the notation resembling a loose pictogram for the mass of noise desired) used by Davies, rendering the score executable in some sense. This is a problem, however, and will be taken up later on in this paper.

[22] "Frying" is simply the forced collision of vocal chords (such as loud throat-clearing or growling), potentially damaging to the voice.

Many singers and voice teachers, however, condemn *Eight Songs* as a baritone piece, consigning it, I fear, to performances of King George more amateur than accurate - a real denigration of the central figure of the work. Another unfortunate effect has been a retreat in development of vocal innovations, probably requiring a vocal and pedagogical champion to emerge to illustrate how best to continue.



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Example 21. Sir Peter Maxwell Davies's *Eight Songs for a Mad King*, Song 1, pps.2-3.

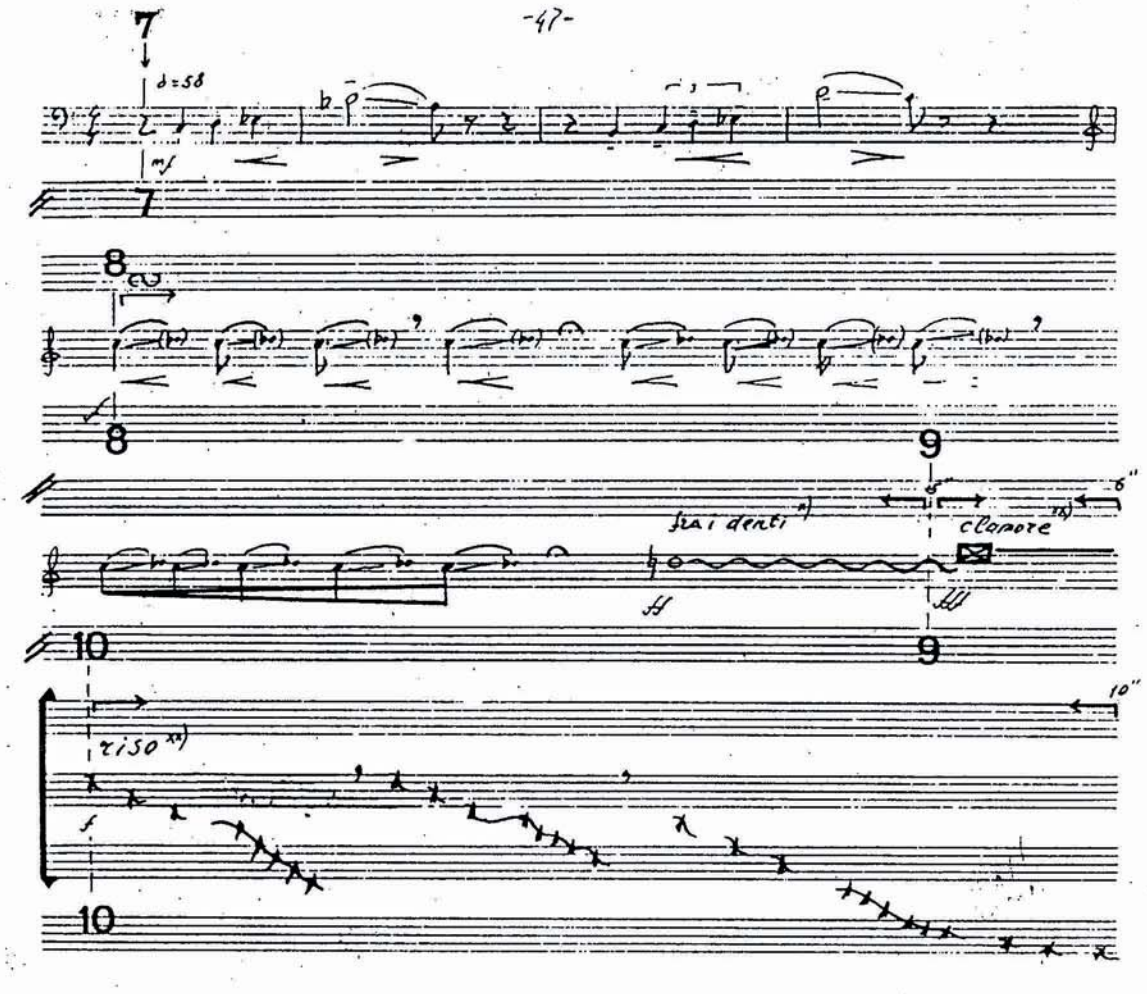
Beyond the controversy of vocal experiments and the by now quite old and accepted piano extensions by John Cage, the most prevalent new devices to be found are in the woodwind instruments, most new string possibilities having been found and even explored centuries previously.[23] Of these, multiphonics, tone color modifications on single pitches, and quarter tone possibilities represent the majority of areas to be explored. The publication of Bruno BARTOLOZZI's *New Sounds for Woodwind* in 1967 was a tremendously important occurrence in the life of contemporary music: tremendous for the possibilities it opened for multiphonics especially, and also for the deception the book inadvertently practiced on many interested composers. While his diagrams and fingerings for bassoon - probably the best and most adaptable of winds for extended techniques - and oboe are workable and generally accurate, his clarinet fingerings are only useable on German clarinets, played by few Americans and hardly the unanimous choice of Europeans. The flute multiphonics listed are not entirely accurate either, being mainly designed for instruments without the B foot joint so common today, and even then not entirely playable. The saxophone, a great source for new sounds as well as a very popular instrument for many composers, is not even discussed. Embouchure issues were addressed by Bartolozzi but not to the extent necessary. In fairness, later studies, such as Robert DICK's *The Other Flute* (1989) and *Flying Lessons* (1990) with accompanying recorded text, though comparatively exhaustive, demonstrates that much individual experimentation in breath support, embouchure, playing angle, posture, etc. must take place regardless of the amount of notation given. Further, these control issues often - even usually - tend in directions that look in precisely the opposite direction of established instrumental pedagogy, placing a layer of resistance between music written using these techniques and fine players not trained in any but the most traditional of musics. As is clearly implied, there is also great difficulty in even beginning to establish standard fingerings for a lot of these new sounds, especially multiphonics and extensions of multiphonics, while fingering for timbre variation (or playing ease) has long been a part of wind pedagogy and method texts for quarter tone fingerings are becoming increasingly available for all instruments.[24] More and more, virtuosi who specialize in recent music are becoming the main information sources, the works written for them illustrating their discoveries, for an expanding number of techniques. What performers **can** do conditions what will be written. Certain players come particularly to mind as the sources of many new sounds. Among them are Alan Hacker on clarinet (whose glissando harmonics in clarinet multiphonics are such a striking feature of Maxwell Davies's *Eight Songs for a Mad King),* Robert Dick on flute, Heinz Holliger on oboe, and Valeri Popov and William Davis on bassoon.

Sofia Gubaidulina has had a long and productive relationship with Popov, having written two works for him specifically and using many extended techniques in other of her works that involve bassoon. In addition to extreme high register (requiring a special bocal throughout the work), her *Bassoon*

[23] In a sense, percussion is nothing but new sound possibilities; hence, percussionists are quite used to having to be flexible in what they are called upon to do. Brass, being more limited in a number of ways, have not been explored to anywhere near the same extent as winds and strings. Even the trombone, beyond certain mute and vocal effects, cannot be classed with the others, its literature having really peaked in terms of new sounds by the mid-1960's with works by Stockhausen, Berio, Globokar, and Jacob Druckman - often manifesting far less variety of sound that what can be heard routinely today in works for solo strings or winds.

[24] Timbre changes using alternate fingerings and quarter tones are often the same thing in reality. For example many timbre changes also affect the pitch of the note fingered. Embouchure adjustments, ordinarily made to "correct" the intonation in equal temperament, would be unnecessary here. At times, embouchure adjustments might be made to bring out the quarter tone intonation more clearly.

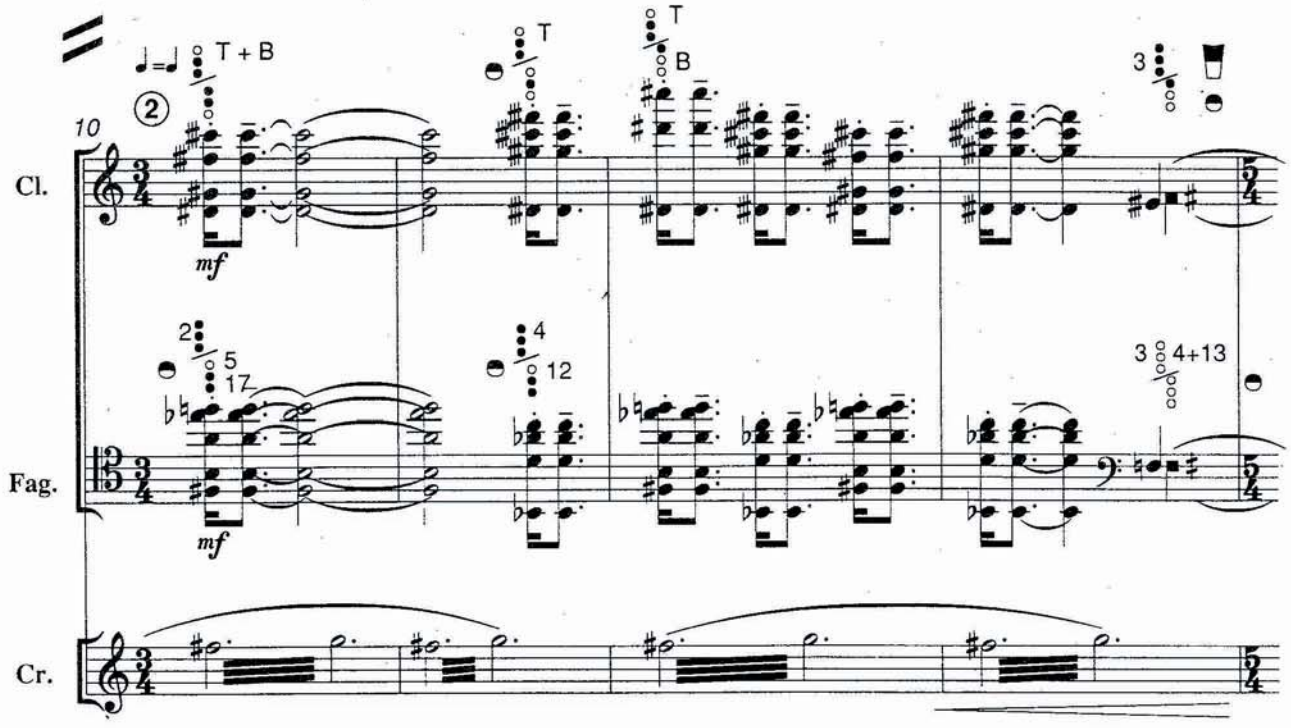
Concerto involves a wide variety of precisely notated multiphonics and pictogram notations of some special human sound imitations ("riso" or the "laughing" sound, for example, shown in **Example 22**). Her *Duo* explores the same types of sonorities in much the same way. In both works, all sounds are relatively easy to produce and are used as timbral variations or formal articulations - as special sounds that extend the specific musical contexts in which they occur.



Example 22. Sofia Gubaidulina's *Concerto for Bassoon and Low Strings*, movement 4, bassoon cadenza.

Of much greater interest to me is the second movement of her previously mentioned *Hommage,* which is a trio for horn, bassoon, and clarinet. The bassoon and clarinet play only quarter tones (functioning as very ornamented melodic passages highlighting the pitch B-flat 4) and multiphonics. Unlike the *Bassoon Concerto* and *Duo,* where the specific pitches of each multiphonic used are not of importance to the structure (meaning that any fingering changes necessary to produce stable multiphonics should be permissible), all pitches and fingerings for both clarinet and bassoon are given with utmost precision. Clearly, Gubaidulina is not creating a sound as simply a sonority but as part of a definite harmonic progression, emphasized by the always unison rhythm of bassoon and clarinet. This is risky as the winds do not play during the first movement, creating some situational concerns, such as humidity, reed wetness, etc. Fortunately, all notated bassoon multiphonics work well with only a modicum of additional reed and lip adjustments.

On the clarinet, much balkier than the bassoon and very subject to air, reed, and mouthpiece issues in the production of multiphonics, the problems are vastly greater. The marked tempo of quarter = 100 makes the situation more difficult since there will be little time to make an adjustment with multiphonics that do not speak immediately or properly, especially the ones that are rearticulated after rehearsal 2 (**Example 23**). The worst news of all is that the clarinet multiphonics were written for German clarinets, making the fingerings completely useless for French or Italian instruments.[25] Since most American players use French instruments, this can only mean that most Americans cannot play *Hommage à T. S. Eliot* as notated. When joined with the acoustic problems associated with clarinet multiphonics in general (such as lack of focus on all partials in the chord, absence of a notated fundamental, and other problems with all expected notes speaking), it is even hard to imagine how this movement can be realized successfully.

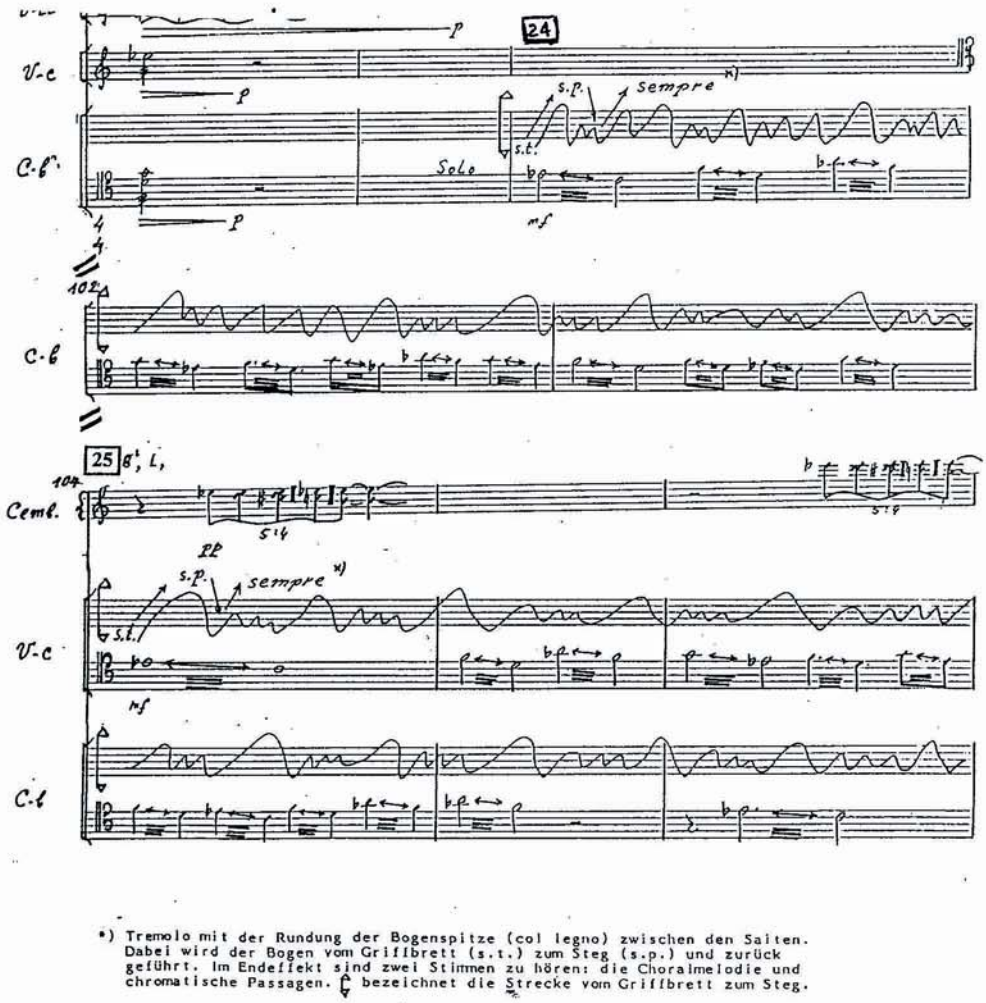


Example 23. Sofia Gubaidulina's *Hommage á T.S. Eliot*, movement 3, mm.10-13.

[25] Experimentation on a German clarinet, however, reveals that the notated multiphonics were hardly 100% reliable on that model either. Another unfortunate sidelight is that the German fingerings do not necessarily - certainly do not always - approximate useable French fingerings. This means that Gudbaidulina (and other composers using the German model) cannot even give a rough idea as to how to finger similar sounds on, say, a Buffet clarinet. It should be noted in passing that the Gidon Kremer recording of Hommage clearly involves a German clarinet since the multiphonics sounded seem to be close to what is notated. I can only say seem, however, since the inherent tone quality issues for multiphonics for two instruments playing simultaneously make it rather difficult to hear the precise pitch content of each chord. Not all chords are realized fully, however, the clarinet often missing a pitch somewhere in it's mixture of notes (often the fundamental). Thus the German instrument is not fully reliable for all of these pitches, even in a recording situation.

The approach I have taken has involved some very intense work with the clarinetist, as well as some real soul-searching, to arrive at solutions that are as close as possible to the pitches Gubaidulina has indicated. To begin with, I focused on the upper partials of each chord, starting with register and then narrowing down to the individual pitches as much as possible. Through a lot of trial and error, multiphonics were found that gave most of the pitch content, the correct register density (at least regarding the higher pitches, though often not the fundamental), and that could speak quickly and with as much control as possible. Bearing in mind that the embouchure, reed, and breath techniques used for multiphonics are quite different from normal playing, this took some time but was met with sufficient success that I do not believe that the pitch integrity of the work was harmed by the use of the French clarinet. I did discover, however, that the multiphonics found did not always transfer to a different French clarinet in all cases, even by the same maker. The solutions, then, were closer to a solution to the German fingerings - and might be used as a starting point on other French clarinets - but could not be published as alternatives since they, too, might not work. The process taken will simply have to be recapitulated by any player with a French instrument. Players who perform a great deal of contemporary music, as well as players who own both French and German instruments, will have an easier time of it. I hope that no player or conductor is so undisciplined or disrespectful as to simply find a number of easy multiphonics, regardless of what their sounding pitches might be, and simply use them with no regard to the musical context.

Gubaidulina is also one of the few composers who have actually identified new string techniques that are not simply minor modifications of special bowing or playing techniques. I refer in particular to a completely unique bow technique used in her *Meditation über "Vor deinen Thron tret ich hiermit von J.S. Bach* for string quintet and harpsichord. **Example 24** shows this effect for double bass and cello, the method of execution described in German at the bottom of the music. The rounded part of the bow point is played ricochet, *col legno* between the D and G strings on bass, D and A strings on cello with the bow point also moving vertically between *sul ponticello* and *sul tasto* to create continuous and differing varieties of overtone richness. The actual sound resembles a low register plucked instrument far more than the bass and cello, rather like an exotic folk instrument of indefinite cultural origin. Her description and notation, while very simple, gives a sufficiently accurate idea of how the sound is produced so that I cannot imagine mistaking the intended sound, even if a conductor or performer had not heard a recording of the work. Recordings as evidence, while useful in some cases, cannot be entirely relied upon anyway, as evidenced by a Finnish version of Gubaidulina's *Bassoon Concerto,* where the bassoonist executes a direction to make a "calling" sound on the instrument (notated *Clamore)* by actually screaming (GUBAIDULINA, 1993)! While no doubt a possible interpretation, it is somewhat surprising that Popov himself, who had already premiered, recorded, and given multiple performances of the work, was not consulted since he lived only a few hundred miles away.

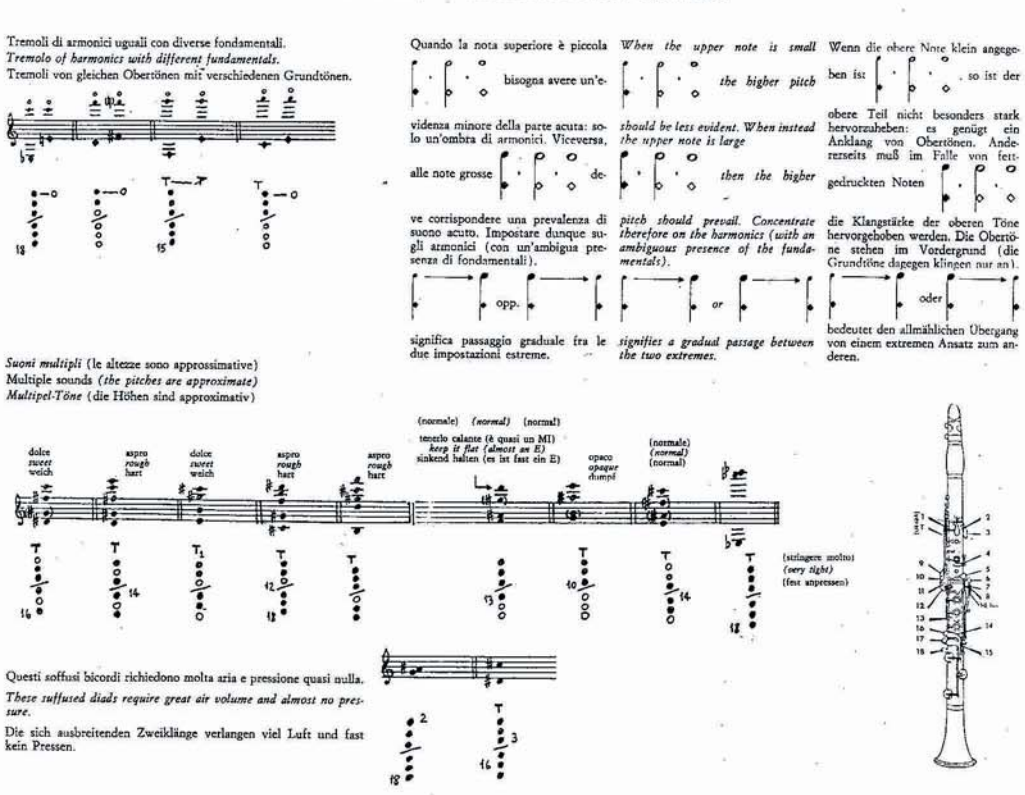


Example 24. Sofia Gubaidulina's *Meditation über "Vor deinen Thron tret ich hiermit" von J.S. Bach*, rehearsal 24.

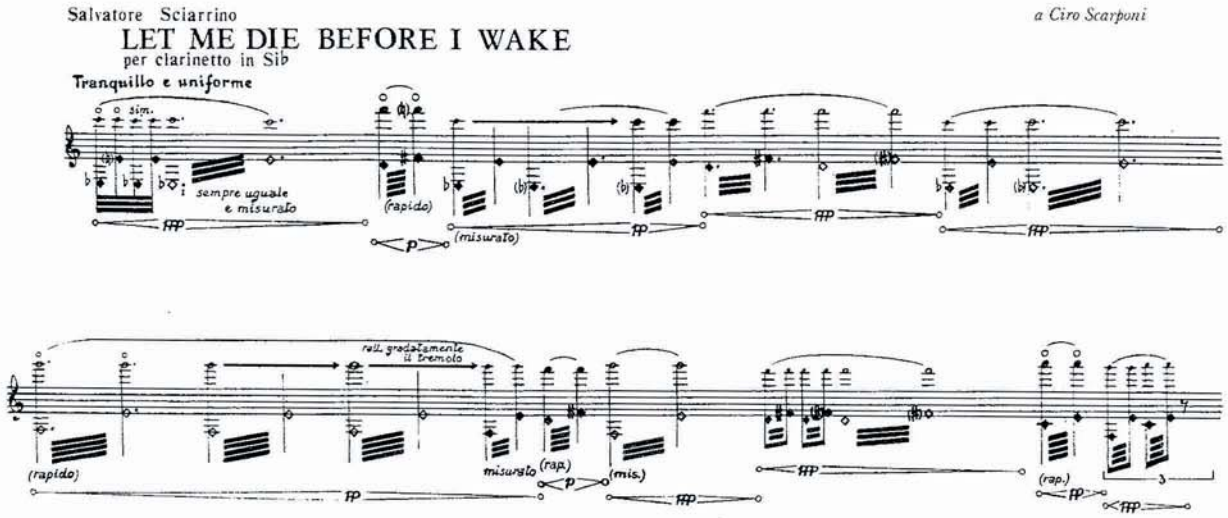
One composer whose scores are tremendously detailed as to execution but in which the intended sound can still be very difficult to imagine is the incredibly imaginative Italian Salvatore Sciarrino. He has produced a great number of works that focus attention entirely on the new and unusual sounds instruments can produce, notated with a precision that is unmatchable. His clarinet solo *Let me die before I wake* shows the immense difficulty encountered in producing the delicate sound he is after. **Example 25** shows the performance notes. To begin with, an Italian or French clarinet probably must be used, as evidenced by the instrument diagram and demanded by the complexity of the notated multiphonics.[26] While he writes that the multiple sounds are approximate

[26] Making the kind of transfer accomplished in the Gubaidulina *Hommage,* cannot be done authentically without the direct participation of the composer, given the complexity and perishability of the sounds he is creating.

pitches, it is clear that he does not mean that they can be chosen at the player's discretion; approximate means only within a quarter tone or so of the notated pitch. The description of the air and embouchure requirements indicate that this piece possesses not only its own compositional vocabulary but also its own pedagogy. With all the detail of the performance notes, I believe that actually hearing what should sound from reading the score (see **Example 26**) is by no means clear. The intent is quiet texture of *crescendi* and *diminuendi* of partials with trilled multiphonics, controlled by breath pressure and to a lesser extent by the speed of the trill. The sound is ethereal in the most literal sense. I confess to being very glad the composer is alive to consult or I am unsure as to what the result would be from just the information in the score. I can only imagine a long period of trial and error to master the basic gestures of the piece, followed by a still longer period trying to capture the intended beauty of the sound. This type of reasoning is required on all pieces for winds by Sciarrino, the winds being the most inventively used. His string writing, while entirely made up of special techniques, does not break new technical ground.



Example 25. Salvatore Sciarrino´s *Let me die before I wake*, Performance Notes.

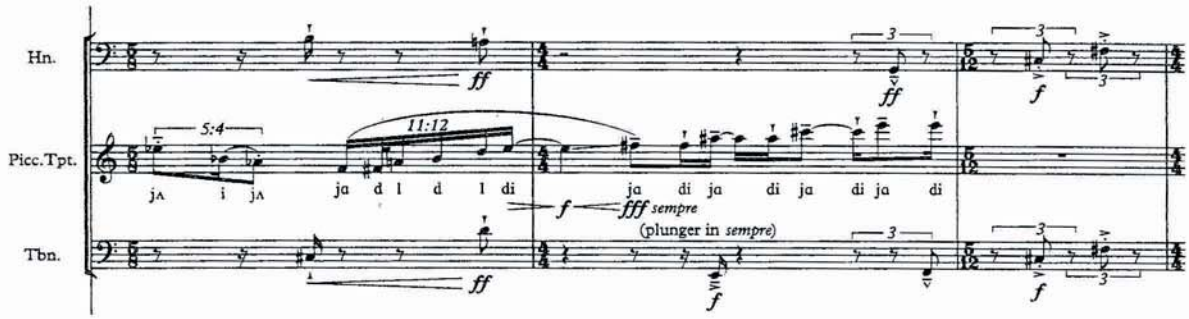


Example 26. Salvatore Sciarrino´s *Let me die before I wake*, p.1.

A final example I want to cite is Berio's recent *Sequenza for bassoon.* The latest in his long series of virtuoso solo works, this *sequenza* involves the usual assortment of conventional and unconventional playing techniques, without going to the extremes of Sciarrino. Berio requires, however, that there be no cessation of sound throughout the entire nineteen minutes of the work, a clear indication that only those who can execute circular breathing can play it. Circular breathing has become an increasingly important, teachable, and more typical wind performing technique over the last two decades, but Berio's requirement is extreme. The problem is not so much the circular breathing itself but the impossible-to-control collection of saliva in the mouth that will occur over 19 minutes. The body must produce it and so the player must make a choice at some point to go against the composer's intention. In making this demand in the context of all the other expected technical instrumental demands, Berio seems to have exceeded what can be practically executed, at least for now.

With the possible exception of Berio's *Sequenza for Bassoon,* no work discussed so far, no matter what problems it presented, can be considered unplayable as written. There are works that do fall into this category, often for reasons involving the combination of problems from all of the categories I have discussed. I am not referring here to music that, through its musical detail or notational complexity is merely very difficult. Thomas Adès's *Living Toys* was thought to be impossible by a number of players, until successfully recorded under the composer's direction. **Example 27** shows a passage from Adès's work with a fiendishly difficult trumpet part involving the attainment of precise vocal sounds through hand muting, and with metric writing that appears to pose some very serious counting problems.[27] There is nothing, however, on this page that cannot, with time and effort, be executed. The work itself is immensely exciting and well worth the effort spent.

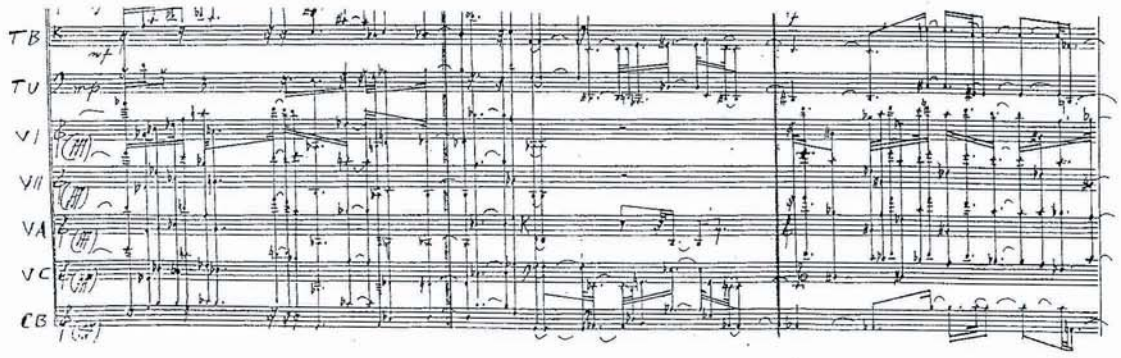
[27] The 5/12 meter is a way of notating a *de facto* metric modulation in which the counting unit is the triplet eighth. Therefore, this measure consists of 5 triplet eighths, as distinguished from the quarter note of the previous 4/4 bar.



Example 27. Thomas Adès´s *Living Toys*, mm. 324-326.

When considering music that goes beyond the bounds of playability under almost any circumstances, one composer who comes to mind more than any other is Iannis Xenakis.[28] Because of the severity of his aesthetic, his general lack of interest in instrumental limitations and idiom, perhaps even the relative sketchiness of his compositional training as opposed to his training and interest in mathematics and computers (BÀLINT, p.7-46),[29] Xenakis has composed music that creates far more problems than can be solved. I am not referring to such works as *Atrées, Herma,* or *Eonta,* where complex subdivisions of the beat are super-imposed and can, with time, be performed. His latest ensemble works, while fascinating in themselves, present layers of difficulties in execution well-beyond anything discussed thus far. Of these, *Échange* exemplifies best the range of issues involved.

Somewhat, but not entirely, beyond Xenakis's control is the quality of the notation. All examples used here are drawn from the only available score. The instrumental parts are only slightly easier to read, if only because more conventional notational norms apply. In the score, unison rhythms are notated with common stems and beams for all notes involved, as shown in **Example 28**. Whatever the intention, the visual image is extremely cluttered and almost resists reading. Even if the score were of engraved quality, I cannot imagine that the task of reading rhythm notation of this type would be much easier. The notation, then, is a problem for the conductor and the performers.



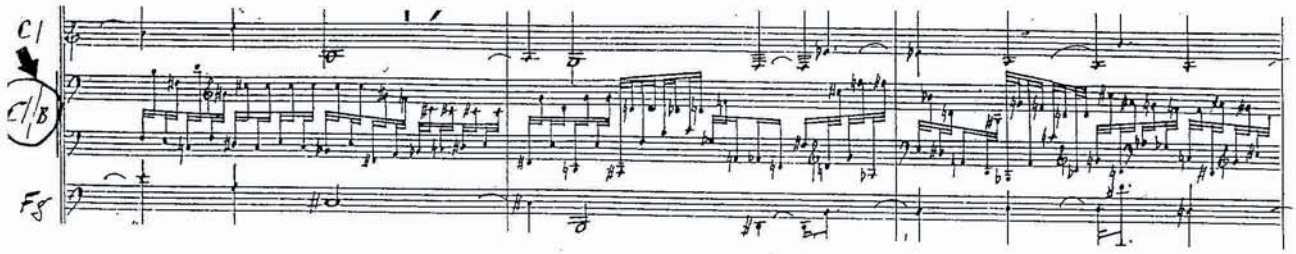
Example 28. Iannis Xenakis's *Èchange*, mm. 49-51.

[28] Another is Brian Ferneyhough and for many of the same reasons cited for Xenakis. It must be said, however, that the problems posed in a lot of Ferneyhough's chamber music, though great, are measurably less than in the chamber music of Xenakis.

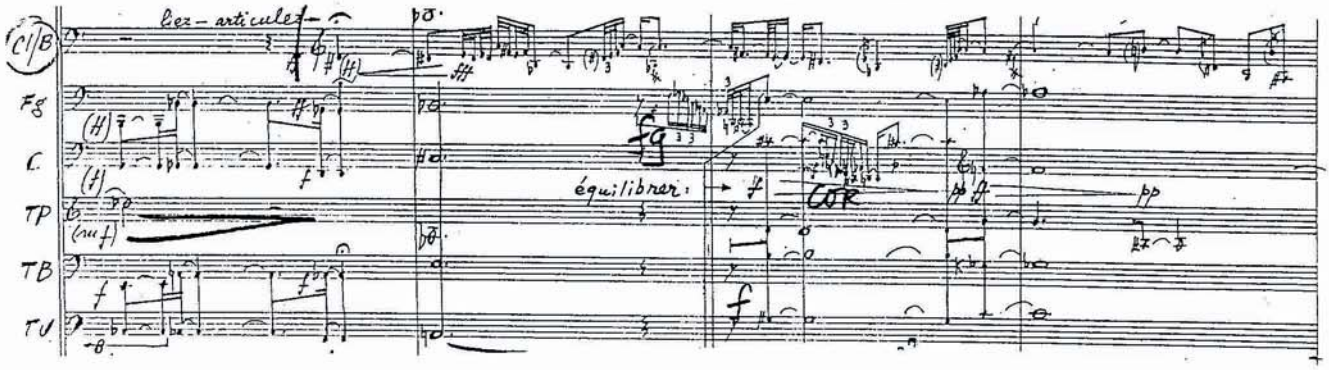
[29] As related by Xenakis himself in Varga, Bàlint. *Conversations with Iannis Xenakis.* London: Faber, 1996. pps. 7-46.

The notation difficulties are made more acute by the tempo designations, especially in conjunction with the general rhythmic complexities the piece presents. The entire work is notated in 4/4 meter. The opening tempo is sixteenth = 60 mm. A passage at this tempo must be conducted by the sixteenth note, requiring a 4-fold subdivision of the beat, 16 beats per measure. Quarter note beat location from the conductor is crucial for the players who, when the complexity of the subdivision increases, will have to maintain a high degree of concentration to stay in the right place. To be sure, the tempo increases to eighth = 60 eventually, necessitating only 8 divisions of the beat per measure. The principal subdivision of the beat on which attacks takes place also gets smaller, however, increasing the counting problem considerably. A very short passage in unison rhythm at eighth = 120 attains a complexity very difficult to perform consistently. Combined with the poor notation system and quality in general, the tempo decisions in the context of the rhythmic complexities already place the work at the high end of needed preparation time for performance.

Technical execution is somewhat variable but, for some parts, of extreme difficulty. *Échange* is, essentially, a chamber concerto for bass clarinet, written for Harry Sparnay, the Dutch virtuoso. Some of the solo passage work is of the highest difficulty. **Example 29** shows a passage in 32nds where range alternation and tempo are clearly at odds, requiring incredible fingering technique, innovative fingering decisions, and highly modulated breath and embouchure control. Others of the instrumental parts have moments of great difficulty, though usually of short duration. **Example 30** shows bassoon, horn, and tuba lines that, at tempo, present considerable technical problems that are solvable with time and patience. Interestingly, the multiphonics used for soloist and other players are all left to the performers discretion and, assisted somewhat by the dynamic markings given, present no real problems.



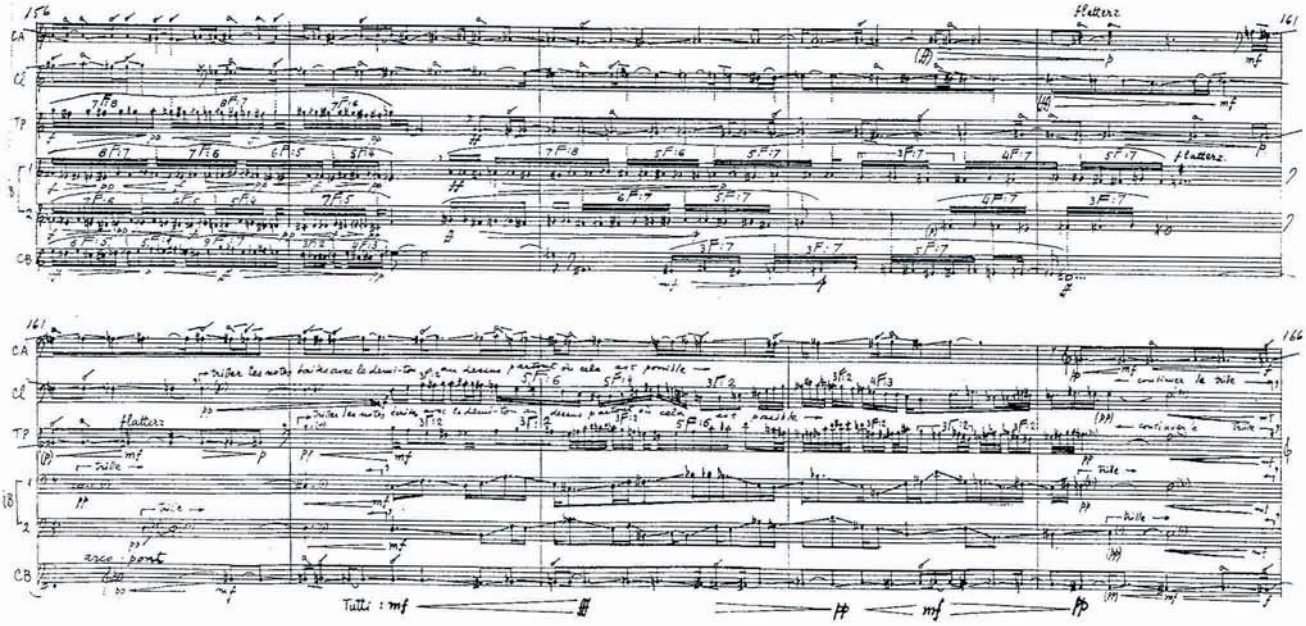
Example 29. Iannis Xenakis's *Èchange*, mm. 66-68.



Example 30. Iannis Xenakis's *Èchange*, mm. 55-58.

Some less solvable problems occur in the string writing throughout the work. While the extreme range shifts in the wind and brass parts can be executed with practice, basic questions of idiom augments this problem when applied to the wide leaps in the strings. The players have to spend a lot of time grabbing notes literally out of the air, as shown in **Example 28** above. Since, as is typical for all of Xenakis's music, vibrato is forbidden on all instruments, covering any adjustments made if a note is under or over-shot is not possible. More than this, the open strings are hardly ever a factor, with most of the wide leaps notated as stopped notes. At the level of difficulty the rhythm (frequently in unison with many instruments) creates, the pitch writing goes beyond what can be done more than once or twice in the practice room in preparation for much of the time. **Example 28** contains passages for all string instruments that, at the marked tempo, are not playable with any reliability. This is especially the case for the viola and cello, both of which are well away from their more normal playing range, even measuring normal by the standards of Boulez. Here, the strings play a very fast passage doubling pitches with the winds in a unison rhythm that is, in and of itself, extremely difficult to play in the given notation. Note the complete absence of any open strings, coupled with having to cross and jump over strings at a high rate of speed.

Owing to these challenges, several questions present themselves that have no easy answer. How important are the pitch doublings of the strings and winds? The notation makes this relationship important. At the very least, the doubling cannot be ignored. Can the winds simply cover up the strings, thereby bearing the brunt of responsibility for the projection of pitch? Only in a recorded version can this be done. One recording of the piece clearly favors the winds, and for good reason (XENAKIS, 1996). The strings aren't anywhere close to the correct pitches. On the ASKO ensemble recording with Sparnay, the balance is more reasonable (XENAKIS, 1990). A live performance simply has to balance or the sound will be inauthentic and awful. Can this passage be performed with perfect accuracy over 50% of the time by the strings? The answer can only be maybe. Any percentage higher than 50% will be a function of player experience. A performer who specializes in just this kind of geographic muscle memory may attain a certain level of consistency over time. Experience alone will not, however, subtract that much practice time from what is necessary to play the viola part in the passage in **Example 28** above. Of course, all five string players must be able to do this synchronously, or else the texture cannot be attained as written. Finally, and embarrassingly, will a conductor actually hear pitch errors in this texture once it gets close to performance tempo? The answer is probably not, unless accompanied by rhythmic errors as well or unless the note missed is missed by quite a bit. Lest anyone believe that this is an isolated case in Xenakis, I offer **Example 31**, drawn from his *Épéï,* a work for english horn, clarinet, trumpet, and two trombones. The same notational problems exist, almost equally exacerbated by the slow, quarter=63 mm tempo, with far worse rhythmic difficulty (involving as it does very complex subdivisions of the beat that nevertheless have a large number of synchronous points within large beats, as shown in measure 161 in the two trombones). This is further aggravated by the fact that all notes have continuous quarter tone *glissandi* between them. The combination of effects to be executed, considering that not all of these pitches can be reached easily by the notated *glissandi,* may, in fact, place *Épéï* at a higher level of difficulty than *Échange.*



Example 31. Iannis Xenakis's *Épéï*, mm. 156-166.

These are very discouraging questions with equally discouraging answers, pointing to the fact that, even discounting that all notational and organizational factors having been weighted against the players, the actual music has some long stretches that simply go beyond what can be played with any satisfactory measure of predictability. In fact, **Example 28** above and other parts of *Échange* seem to be written without any clear reference to instrumental idiom at all.[30] I can imagine that Xenakis would respond that these were matters of no concern to him in the realization of the physical principles to which these pieces may be said to relate; a variant of Beethoven's purported comment "Do you think I have your silly fiddle in mind when the spirit speaks to me?" While very mindful of the musical issues brought out here, I also have to confess that there is, underneath all the frustration of dealing with these problems, an admiration of a compositional position so remote from expected reality that one is facing a dare in trying to approach the music at all. Aren't we in fact being defied to even try?

One last question comes to mind before we lay the score to *Échange* aside and decide that there is no point in attempting a performance. Can this passage be played with enough accuracy to guarantee the projection of the music? The answer to this question is emphatically yes. I say this having felt all the extremes to the fullest but also having experienced a sufficiently accurate rendition of all sections of the work in live performance to be able to say that it can be done. Was our performance free of minor pitch errors or errors of nuance? From any practical perspective the answer has to be yes. Rhythmic accuracy was, for all intents and purposes, total. Pitch accuracy was the very best one can expect in live performance of the material of **Example 29** shown before. Was it worth the eighteen hours of rehearsal required to put the piece together, not counting individual practice? Not all players would agree with me but I am convinced that it was worth it. Even the

[30] This is a characteristic of a great deal of Xenakis's more recent music.

players who were skeptical had to admit that rhythmic difficulties they faced in music by other modern composers performed subsequently were child's play by comparison. All players became stronger in their musical and technical abilities through the preparation and performance of *Échange.* A work like Boulez's *Pli selon pli* or Carter's *Double Concerto for harpsichord and piano* will be that much more approachable for this experience.

The consequences of non-involvement in performance practice issues in contemporary music are dire. If kept up for a sufficiently long period of time, not only is there a discernible negative impact on the performance of recently composed works but also on music from the middle of the 20th century and earlier. Some of you will be aware that the 1998-99 season of the Metropolitan Opera in New York City saw the Metropolitan Opera premiere of Arnold Schoenberg's *Moses und Aron,* a work composed between 1930-1932. There was the usual critical complaining (Bernard Holland in the New York Times the day following the premiere)[31] about the so-called severity of the music, some questionable staging, and poor audience reaction. Despite this critical spleen, the attendance stayed at a high level and, if all performances were not sold out, generally filled the house. I saw the next to last production in February of 1999 and was largely very satisfied by much of the performance. If it was not entirely faithful to Schoenberg's vision, it showed at least that a large chorus could learn the difficult choral part and that, far from being the musical dissertation on the philosophy of religion that most critics and many historians make it out to be, the work was a grand opera *cum* music drama with a lot of impact. The audience responded very favorably. For several weeks' following the publication of Holland's review, for example, numerous letters were sent to the *New York Times* that questioned Holland's objectivity and were favorable toward the Met production. There was only one real problem that I could hear clearly: the orchestra played fairly well but had numerous intonation, tone, and rhythmic problems. It was also clear that, as fine a conductor as James Levine can be, he was largely relegated to a metronomic role. While the score is difficult and contains some real problems in the low brass scoring, this is an orchestra that bills itself as one of the finest in the world and **they** experienced significant performance problems. How can this be? *Moses und Aron* is almost 70 years old and they are only now getting around to playing it. Had the Metropolitan Opera performed the work from at least the late 1940's as it should have and involved itself with other newer and equally challenging works, the orchestra would not now find itself technically incapable of matching performance standards in music of all periods that many of the finest opera houses in Europe can attain. The efforts of the Berlin Philharmonic under Claudio Abbado, the Berlin Opera, and the Vienna Philharmonic put American orchestras to shame, in large part because these and other European groups perform a very large amount of recently composed music, viewing Schoenberg, Webern, and Berg's works as classics, not as contemporary music. The Metropolitan Opera orchestra is many decades behind in performing technique and, given the one-per-year rate that the Met commissions new works, may be expected to continue to fall behind. Even the recent commissions to Phillip Glass, John Corigliano, and John Harbison do not solve the problem under consideration as they are written in retrospective styles that make few vocal and instrumental demands beyond the 19th century Italian repertoire that is the Met's staple.
Coherent, interpretive performances of new works require a performing background in new music that involves consistent and relatively continuous exposure to the changing styles and performance issues that have taken place.

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[31] Holland wrote several columns for the "Arts and Leisure" section of the New York Times that were critical of *Moses und Aron* as opera primarily, less from the standpoint of what the Metropolitan Opera actually did. The most recent version of his criticism appeared, albeit briefly, in his article of December 26, 1999.

Performers and conductors must not only strive for but attain a high standard of knowledge and sophistication in the music of the present both for the sake of their own abilities but also for the survival of concert music. Creating the conditions for an artistic and aesthetic success no matter what the musical style of a given work must be the focus for all performers and conductors if they are ever to expect that audiences will be able to make such demands themselves.

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