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Expanding the String Technique

Klaus-K. Hübler

ABSTRACT

This paper deals with various modes of enlarging traditional techniques of playing stringed instruments. Most of the new technical procedures are bound up with the development of polyphonic texture. Right-hand techniques concern the handling of the bow, such as the dualism of up-strokes and down-strokes and the alternation of strings. Left-hand techniques are focussed on fingergrrips, either concurrently with or independently from bow-techniques. Finally, attention is drawn on the importance of such technical devices for fostering the composer's imagination.

Preliminary Remarks on the Spirit of the Instruments

The history of New Music is marked to a large extent by the disregard of the instrument and its limitations. On the one hand, the serialist school conceived the compositorial parameters on the basis of abstract laws; the specific technical possibilities of the instrument were considered at the most as an undesirable obstacle to the realization of the constructive concept. On the other hand, one sought to distort the sound quality of the instrument in an attempt to extirpate all the well-known, historical characteristics which the instrument had acquired through centuries of development. Both of these lines of thought shared one common feature: the conviction that the renewal of the sound potential and technique of the instruments could only be attained by a progressive rejection, either partial or in whole, of the traditional instrumental technique and performance style as we know it. Despite the occasionally

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interesting results, these tendencies give rise to dissatisfaction. Instead of seeking to create a series of instruments suited to the new demands, one continued to use the classical instruments, while simply ignoring their historical implications. Our purpose here is to plead for a compositorial writing adapted to the instrument in question. This in no way implies a return to a simplistic pseudo-naïveté; rather, it should promote an expansion of sound and technique which takes its roots in the specific resources of the instrument and in its manner of performance. A critical examination of the instrument and a restriction of the innovative imagination to the instrument's actual potential can lead to rewarding results by opening up a completely new perspective on the instrument.

One of the most fertile manners of expanding the sound potential and performance technique lies undoubtedly in the field of the polyphonic production of tones. Much remains to be done in this area, even with instruments whose tones are produced with such physiologically simple methods as, say, the trombone¹. This applies all the more to the stringed instruments, whose mechanics of tonal production are considerably more complex. In order to clearly illustrate the multitude of components involved in performance, the functions of each hand have been studied separately.

THE RIGHT HAND

Let us first turn our attention to bowing technique. Bowing technique comprises above all two major bowing actions: the change from one string to another as well as the up-bow and down-bow motions.

Change of strings

In classical performance technique, the shift of the bow from one string to another has always been combined with the up and down movement of the bow. However, it can also be used alone as an independent action. A relatively rapid shift between two or more strings, even without a stroke of the bow, is a thoroughly appropriate means of making stopped tones audible. Of course, the result is somewhat weak and contains a certain quantity of noise. However, an increase or decrease of bow pressure makes it possible to differentiate the dynamics and intensity quite clearly; a slightly suggested up-bow or down-bow motion (maximum ± 1 cm) can, if need be, also essentially contribute to

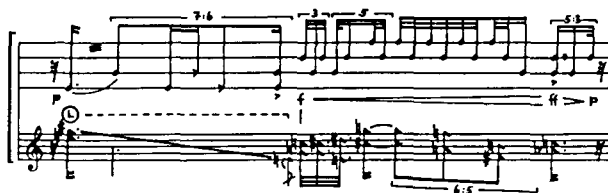
¹ See my article "Die polyphone Posaune" in: Brass Bulletin 45 (1984).

intensifying the tone without destroying the impression of a tone produced without bowing.

The col legno technique produces a distinctly audible modification of the tone colour (reduction of the noise content!) and is ideal in bringing out the rhythmic alternation of the change of string.

The legno/arco battuto also yields satisfactory results under the condition that there is absolutely no bowing motion. This is important in order not to confuse it with the spiccato. When notating the battuto effect, it is recommended to use the wedge-shaped note head (♩).

Since the tones produced by the change of strings can also be realized rhythmically independently of the actions of the left hand, it is recommended to notate them on a separate staff whose four lines represent the four strings of the instrument (from bottom to top g-d-a-e or e-g-d-a). Although this notation is only necessary when one makes use of a rhythmic distinction between the left hand and the right hand, our proposal of a specialized notation is made on the basis of the most difficult case imaginable in order to make it as useful as possible.



Up-bow and Down-bow

The up and down motion of the bow is the traditional method of producing tones on stringed instruments. In traditional performance practice, the rhythm of the bow and the motion of the fingers of the left hand are generally coordinated. However, this coordination is not necessary. A rhythmically independent treatment of both activities permits a distinctly audible polyphonic articulation of the melodic line and the use of all known bowing types.

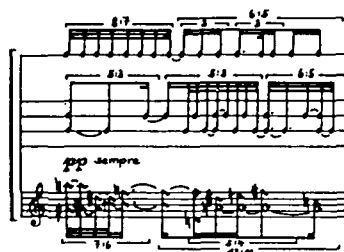
This bowing technique requires the separate notation of the left hand and the right hand starting from a certain degree of complexity. Hence it becomes necessary to notate the up-bow and down-bow on a separate line. Wherever the use of a certain string is desired, for example at double stops, this can be indicated in the staff representing the change of strings. In compositions in which no use is made of tonal production by changes of strings or by the various combinations of techniques as mentioned below, the four-line staff for the shift of strings can be omitted.



Combinations of Performance Techniques

It is obvious that each of the various ways of changing strings and bowing can be used on its own, although their combination offers a considerable innovative potential.

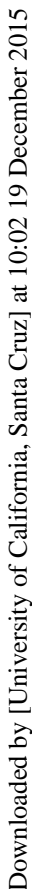
Traditional bow technique is nothing else but a coordination of a series of complex events. Although it is possible to separate them consciously, this requires a certain proficiency. Furthermore, this independent treatment of actions is a perfectly legitimate and consequent step in the expansion of string technique. Coupled with an independent handling of the left hand, the use of a rhythmical two-part bow technique permits a new aesthetic of string writing and confronts the traditional sound ideal with an abundance of heretofore unknown effects.



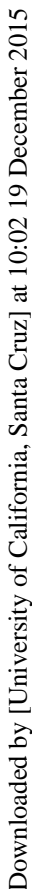
Point of Contact of the Bow and Types of Bowing

It is well-known that the tone quality can be decisively influenced by the point of contact of the bow, i.e. where the bow touches the string, and by the type of bowing, i.e. the use of the hairs, the wood or both. What has been missing up to now has been a really original manner of using these components of tonal production. A first step in this direction could be seen in the independent, rhythmically precise, lightning-fast change of the point of contact of the bow, which could eventually be notated on a ledger line. Analogously, the type of

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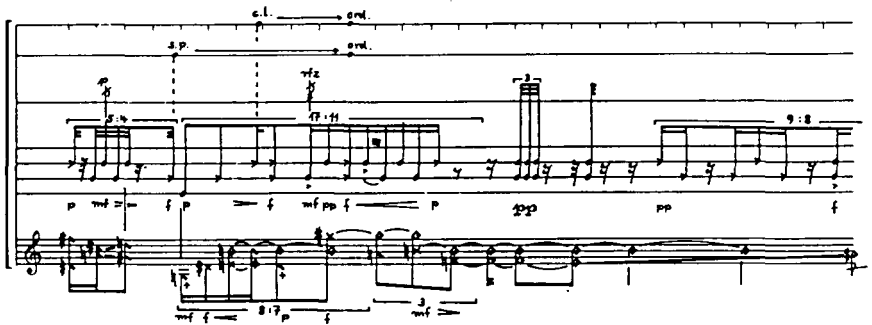
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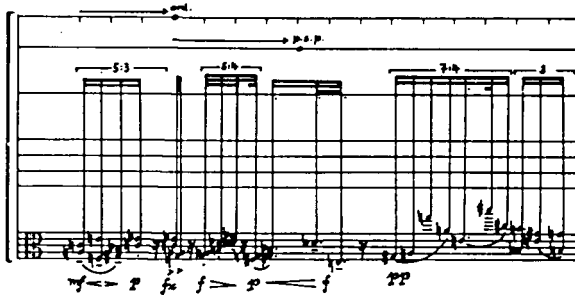
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Thus, both elements are to be seen as interrelated and to be treated correspondingly. This does not only concern the elaboration of the rhythmic relationship. The composer must also be conscious of the purely technical performability of his music. He has to determine the strings on which each passage is to be performed and he must be careful that the shift of position and the limitations of the fingering do not hinder the desired articulation.

Since the stopped and the bowed tones are no longer necessarily identical, it is possible to consider the use of a special note head (♩) for the notation of independent stopping activities. Wherever the actions of the left hand are to be heard, the traditional methods of the finger-tip attack (♩) and the left-hand pizzicato (♩) still provide outstanding effects, and even the impression of held notes can be obtained by a trill with a finger-tip attack. Also very effective is the use of harmonics (♩) and semi-harmonic stops (♩), particularly on those points of the string which are free of vibration nodes. This produces "dead tones", which allows a kind of linear monophony despite polyphonic bowing technique when used in alternation with the ordinario stop.

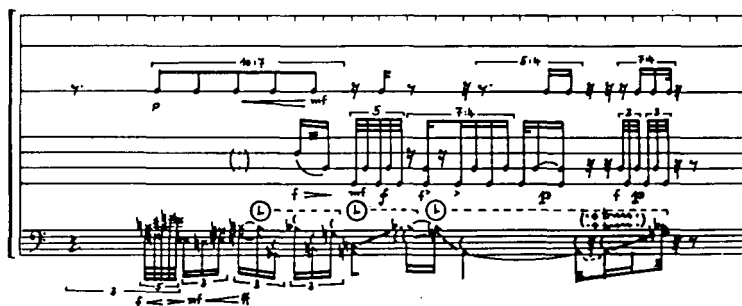


This is perhaps the appropriate moment to mention that, in connection with a treatment of the strings in which the traditional performance manner is the exception, the notation of the otherwise normal performance techniques also becomes the exception, as the following example shows:



Tablature

Since the polyphonic treatment of the string technique represents a polyphonic treatment of actions, it is quite feasible to consider the use of a stopping technique which illustrates in itself the manual aspects upon which the composer cannot help but reflect. In the simplest case, an initial interval is maintained unchanged as a fixed stopping expanse beyond a glissando. But since the distance of the tones from each other is greater in a lower position than in a higher one, this produces an array of divergencies from the tempered intonation. As far as the notation is concerned, it suffices to indicate the initial stop with an L (=loco) and to symbolize how long the stop is to be held with a dotted line.



This principle can be extended at the outset by using the fingering of one position for another. Here it is necessary to clearly delineate the desired stop. This is done by indicating the position (marked as usual with Roman numerals), whose stopping expanse, or breadth, determines the action, as well as by pointing out the location of the fingers in relation to one another. Here, dashes (-) can be used to represent the fingers and dots (.) the modifiable half-tone distances. For example, the indication

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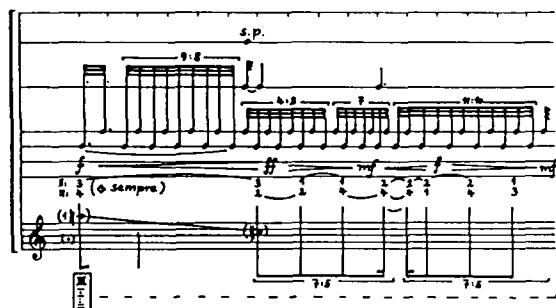
 signifies that one is to place one's

fingers in such a way that the following tones would be produced when placing them in reality on the first position, for example on the A string of a violin:

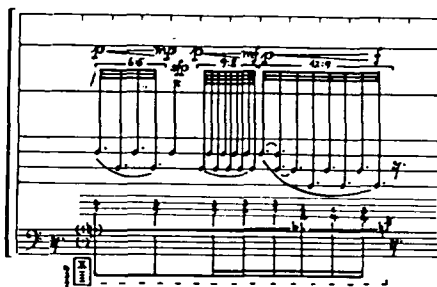


This disposition of the fingering is possible with every initial tone desired and produces results which vary from the given position the more the position used is distant from that whose original stopping expanse is used. The exact location can be determined by the indication of an initial tone, or fixed tone (with

fingering) in relation to a reference string. The left-hand actions are notated by indicating the alternations of the fingerings, whereby now only an approximately determinable pitch result is to be expected (naturally, all stopping types, or at least those previously mentioned, can be used).

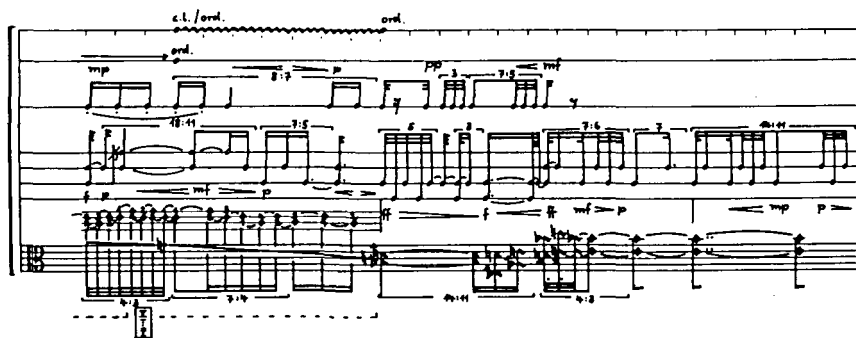
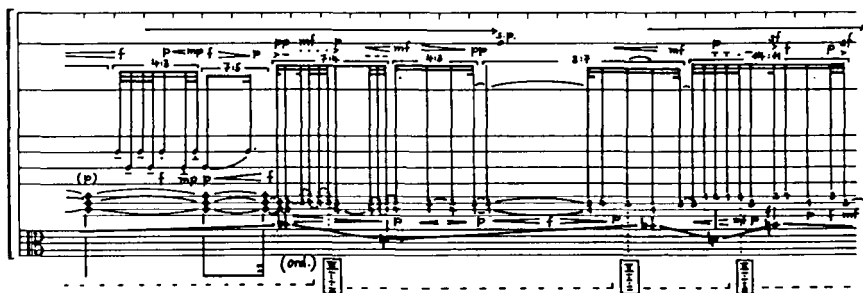
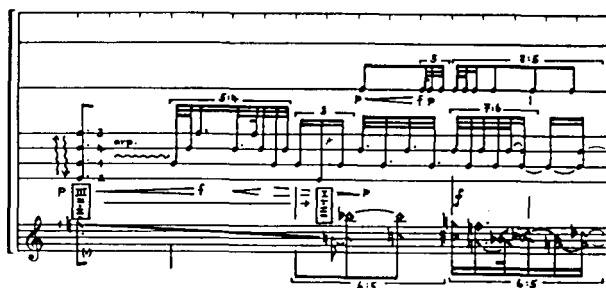


Should there be frequent changes of strings, then it is recommended to indicate the fingering numbers on a separate four-line staff which represents the four strings of the instrument.



Of course it is not at all necessary to maintain a stopping position permanently. A sudden change of stopping position is just as possible as an unbroken transition, which produces a kind of internal glissando; the transition to the traditional performance manner (or to the resulting notation respectively) can be achieved without interruption.

An extremely exciting development of the tablature technique is provided by the independent treatment of finger motion and shift of position. This allows supplementary polyphonic effects and is exceptionally well suited to produce syntheses and mediations between resultant composition and action composition.



We have already seen how the development of string technique can also influence composition; this survey of the technical possibilities of the polyphonic treatment would be incomplete without the mention of the dynamic implications involved.

This musical score is a complex composition for a string quartet, consisting of four systems of staves. Each system includes a violin I part, a violin II part, a viola part, and a cello part. The notation is dense, featuring a variety of note values, rests, and dynamic markings such as *p* (piano), *f* (forte), and *sf* (sforzando). The score is divided into measures by vertical bar lines, and some measures contain intricate rhythmic patterns or complex chordal structures. The overall layout is professional and detailed, typical of a high-quality musical manuscript.

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Basically, dynamics in the present context are to be understood as a composite of three elements: the left hand can provoke dynamic effects by (1) the attack with the finger-tip and the m.s. pizzicato. The right hand can produce dynamics with (2) bow pressure and at the same time realize a differentiation of (3) the bowing speed, independent of the bow pressure (and understood as a form of dynamic shading). The independent treatment of these three factors leads to results which range from the flautando to the squeezed tone and which only momentarily create the impression of certain traditional aspects of volume control. Moreover, it is an important element in the realization of the polyphonic conception.

Handwritten musical score for "The Great Wall" by John Williams. The score is written on a grand staff with a treble and bass clef. The piano part is written on a grand staff with a treble and bass clef. The orchestral part is written on multiple staves, including woodwinds, strings, and percussion. The score is marked with various dynamics (p, f, mf, sf, ff, ppp, fff) and articulations (acc, stacc, marcato, etc.). The tempo is marked "Andante".

Afterthoughts on the Instrument as a Source of Inspiration and Resistance

When writing for a particular instrument, it is obvious that one is confronted by two aspects which are otherwise of secondary importance. On the one hand, the imagination of the composer is needed in order to shuttle back and forth between the idea (the concept) and the feeling (the instrument and its practice) in a solid dialectical manner. Hence the once "miserable fiddle" will not longer be attacked by some extraneous spirit, but turns out to be a source of inspiration which actively helps concretize the compositorial idea. On the other hand, the instrument also confronts the composer with a source of resistance to a degree impossible to determine in advance, since the writing specific to the instrument requires a high degree of penetration in the purely physiological aspects of its treatment. Each compositorial decision must be conveyed down to the last details including the selection of fingering etc.; there should be a permanent tension between the instrument and the intention. A lack of cunning on the composer's part can very quickly distort his musical intentions so as to make them unrecognizable. But if the composer knows how to use this tension, it offers the unique chance to regain a primordial relationship between instrument and composition.

Note: The music examples in the present article have been drawn from the author's Third String Quartet (1982-84). They are reprinted here by kind permission of Breitkopf and Härtel Publishers, Wiesbaden.

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Born 1956 in Munich. Studied composition with Peter Kiesewetter and Brian Ferneyhough. He also studied musical science at the University of Munich. Recipient of various prizes and grants for composition, and published a number of articles on new music. His compositions were performed at festivals in Germany, France, Italy, The Netherlands and Switzerland.