



The Flute: New Sounds

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Source: *Perspectives of New Music*, Vol. 10, No. 2 (Spring - Summer, 1972), pp. 153-158

Published by: [Perspectives of New Music](#)

Stable URL: <http://www.jstor.org/stable/832340>

Accessed: 17/10/2013 00:23

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THE FLUTE: NEW SOUNDS

JOHN HEISS

IN TWO previous articles in *PERSPECTIVES* (Vol. 5, No. 1 and Vol. 7, No. 1) I reported on the possibilities of playing multiple-sonorities on woodwind instruments, and gave lists for flute, oboe, clarinet, and bassoon of those sounds I consider most dependable. Recent developments in the sound-production possibilities on my own instrument, the flute, lead me to offer an updated report. Several of the techniques introduced here are, to the best of my knowledge, my own discoveries; others have become known to me through contact with other composers and performers. My information, however acquired, is naturally limited. The whole subject area of new performance techniques is quite vast and still growing,¹ even just for the flute. Many performers and composers currently have their own individual techniques and fingering charts for new sounds.² The present need appears to be one of communication and consolidation, and it is in this spirit that I offer what follows.

The techniques presented here are divisible into four categories: (I) extension of the low register of the flute, with modified timbre, by an octave downward, (II) production of "harmonics," or more precisely, muted tones in the conventional low register, (III) introduction of noise elements into normal tone, and (IV) recently discovered multiple-sonorities.³

I. Extended Low Register

One of the modified timbres associated with the extension of the low register is the familiar and, indeed, now venerated key-slap, the earliest instance of which occurs in Varèse's *Density 21.5* (1936). Flutists generally agree that the best method of production for key-slaps is to finger the desired note, then raise and slap closed the G-key with the fourth finger of the left hand. This produces the maximum possible volume—a necessity since the sound, although quite percussive, is rather soft in the absence of any air blown through the embouchure. The effective range for key-slaps without air

¹ Even so seemingly comprehensive a book as *New Sounds for Woodwind* (*sic*) by Bruno Bartolozzi (Oxford University Press, 1967) is, as the author points out, no more than an introduction to the subject. There are no duplications whatsoever, for example, between Bartolozzi's lists and the information offered herein.

² Several prominent flutists who come to mind are Robert Cantrick, David Gilbert, Patrick Pursewell, and Harvey and Sophie Sollberger.

³ Since precise verbal description of the timbres produced with the above techniques is difficult, if not impossible, composers are advised to consult with performers.

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is thus low B up a minor sixth to the aforesaid G.⁴ To obtain key-slaps without air in the next lower octave *one simply changes the instrument into a closed pipe*. This may be accomplished by carefully and completely covering the blowhole with the curve on the lower lip between mouth and chin. Clearly articulated pitches then result through use of the normal G-key slapping technique. Interestingly, however, these pitches are much closer to the *major seventh* below the fingered pitch than to the octave below it. (This is

*The actual pitch sounds a major seventh lower than the notated pitch.

Ex. 1. From Heiss, *Movements for Three Flutes*

⁴ The instructions “without air” and “with air” are becoming common, which is to the good since there is a clear difference. “With air” actually means, “Use a little bit of air to gain resonance, but allow the primary sound to be that of the slap.” Notations vary.

I propose $\text{♩} \text{ } \text{ff}$ for “without air,” $\text{♩}^+ \text{ } \text{ff}$ for “with air,” and also $\text{♩}^{(+)} \text{ } \text{sfpp}$ for a sustained tone which is to be attacked sharply through the assistance of a key-slap. This latter effect is possible throughout the entire range of the instrument, either directly or by simulation with the tongue for pitches above G in the low and middle registers. (Simulation with the tongue also works well for key-slaps “with air” above G.) The first two of the above notations call for sounds which must naturally be of short duration.

readily understood if one compares the closed pipe key-slap to the open pipe slap without *any* embouchure contact between instrument and player. In this case, the difference interval is more nearly an octave.)

One may obtain the pitches above the fingered G (sounding A \flat below low C) by slapping the lowest available key with the right hand index finger. Although the sounds produced in this way are of somewhat less intensity than the others, they are useful nonetheless. (Key-slaps “without air” above G in the conventional low register are considerably softer than their counterparts a major seventh below, and for this reason are less useful.) A suggested notation is that shown in Ex. 1, a passage from my *Movements for Three Flutes* (1969) in which these sounds project well.

A second timbre for the projection of sounds below the traditional range involves pressing both lips into the blowhole and playing with a trumpet-like embouchure, making the lips vibrate. The flutist Patrick Pursewell has a reputation for considerable proficiency with this technique, which is used in a piece of his entitled *It Grew and Grew*.

II. Low Register “Harmonics”

It is normally assumed that harmonics on the flute begin at the first available point for overblowing a fundamental, namely one octave above low B. Non-conventional fingerings may be used, however, to produce tones of various timbres below this pitch down to low D \sharp .⁵ Example 2 gives fingerings which produce muted, soft, foghorn-like sounds. Although other fingerings are possible, those given here were selected to obtain the highest potential consistency of timbre and intonation. Strictly speaking, these pitches are not harmonics; they are, rather, unfocused and spread tones resulting from the closing of holes below the one open hole which produces a given pitch.

In my notations, (tr) indicates a trill, Th, 2, 3, 4 and 5 refer to the fingers. Letters in parentheses indicate keys to be depressed, and ($\frac{1}{2}$) signifies that the key is to be closed but the hole left open. The third of my *Movements for Three Flutes* develops these sonorities as the basic sound-material with, I feel, electrifying effect. This movement concludes, incidentally, with a sustained low B \flat —a scordature pitch obtained by pulling the headjoint out about one inch and playing low B. (The player needs about four seconds in which to do this safely.) The tone is soft, round and, if played non vibrato, quite beautiful.

Finally, and for lack of a better place in which to mention it, there are many flutists who have excellent control of “whistle tones”—the very soft, high, and extraordinarily clear pitches obtained by extremely gentle blowing across the blowhole.⁶ The pitches are overtones of a fundamental (generally low B, C, or C \sharp) in the region of the fifth to tenth partials.

III. Noise Elements in the Tone

One of the earliest sounds in this now very broad category is the swoosh-like effect in the Villa-Lobos duo for flute and cello entitled *The Jet-Whistle*

⁵ Bartolozzi’s fingerings go down only to G \sharp .

⁶ According to Harvey Sollberger, the flutist Robert Cantrick is expert at this.

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Left Hand	Th, 2, 3, 4	Th, 2, 3, 4	Th, 2, 3, 4	Th, 2, 3, 4	Th, 2, 3, 4(½)	Th, 2, 3, 4, 5
Right Hand	2, 3, 4(½), 5(C#)	2, 3, 5(C & B)	2(½), 3, 4	3, 4, 5(C)	2, 3, 4, 5(C#)	2, 3

Left Hand	Th, 2, 3(½), 4	Th, 2, 4	(♯)	(♯)	(♯)	(♯)	(♯)
Right Hand			overblow the octave				
Right Hand		2, 3					

							<i>etc.</i>
Left Hand	Th, 2, 3, 4	Th, 2, 3, 4	(♯)	(♯)	(♯)		
Right Hand	2, 3, 5(C)	2, 4, 5(C)	overblow the twelfth				
Right Hand			(R-2 slightly open)				

Ex. 2. For the flute: fingering for low-register harmonics

(1953). The flutist closes his entire mouth over the blowhole, fingers low B, and blows a sudden burst of air. One can discern the overtones of this B descending rapidly from about the eighth partial, but the strongest impression after the attack is that of air—a quick, white-noise-like, downward glissando resulting from the performer's rapid exhalation. A number of related sounds are obtainable through similar procedures. A master of these techniques is David Gilbert, whose astonishing *Poem VI* (1966) for alto flute sounds like an electronic piece and must be seen performed to be believed.

Joyce Mekeel, a composer and teaching colleague of mine in Boston, has a solo flute piece entitled *The Shape of Silence* (1969) in which spoken words, sharply enunciated, are used both to articulate and to sustain low-register tones (see Ex. 3). This work calls also for sotto voce tones of barely audible pitch with a predominantly wind-like sound, which are obtained by blowing rapidly *across* rather than into the blowhole. The composer neatly elides a sung tone with a played one in the passage quoted in Ex. 4. Readers are advised that for simultaneous production of sung and played tones, the flute's pitches are best placed in the low register.⁷

⁷ The earliest example known to me of simultaneous playing and singing on the flute is by Sam Most on a jazz LP from the 1950's entitled *The Herbie Mann-Sam Most Quintet* (Bethlehem, No. BCP-40).

COLLOQUY AND REVIEW

Proportional notation.
Each measure is approximately ten seconds long

f loud, intense, emphatic whisper

as many repetitions of the word as possible, increasing speed

mf (flatten)

speak speak speak speak speak sp (ee) (tone) (sfz) k

mf (tone)

flatten stay flat

(diminuendo to nothing)

(breath)

Ex. 3. From Mekeel, *The Shape of Silence*

evenly, dead sound

mf

Flute

Male voice:

slow gliss. (tone)

tho - - rnn sto - - nnn (e)

Ex. 4. From Mekeel, *The Shape of Silence*

IV. New Multiple-Sonorities

The multiple-sonorities given in Ex. 5 are offered as additions to those listed in the two PERSPECTIVES articles mentioned above. The total content of these three lists for flute constitutes the current extent of my solid information in this area. Many additional sounds are no doubt possible; however, I have submitted only those which I feel are relatively secure as to intonation and ease of production.

As a final note, I hardly need emphasize the viability of the foregoing techniques for new music. Receptive performers consistently prove that the new techniques are easily learned and assimilated, and the effective integration of such techniques into works by composers as diverse as Martino, Johnston, Perle, Schuller, W. O. Smith, Paul Zonn, and those mentioned herein is testimony to their proliferation and vitality.

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- ◐ = long or short duration
- = short duration only
- ↑ = trill the indicated finger(s)

	21	22	23	24	25	26	26a
Left Hand	Th, 2, 4	Th, 2, 3, 4	Th, 2, 3, 4	Th, 2, 3, 4(½)	Th, 2, 3(½), 4	2, 3, 4	
Right Hand	2, 3, 4, 5(B)	2, 3(½), 4, 5(C)	2(½), 3, 4, 5(C#)	2, 3, 4, 5(C)	2, 3, 4	4(½)	

	27	27a	28	29	30	31	32	33	33a
Left Hand	Th, 3	Th(Bb), 2, 4	Th, 3, 4, 5	Th, 3	Th, 2, 4	Th, 2	Th, 2	Th, 2, 4	
Right Hand	2, 5(Eb)	2(tr), 3, 4	2, 3(tr)	4(tr)	2, 4(tr)	2(E), 3(tr), 4	4(tr), 5(Eb)		

	34	34a	34b	35	35a	35b	36	36a	36b
Left Hand	Th, 3			Th, 2			Th, 2, 3, 4		
Right Hand	2(tr)			4(tr)			2, 3, 5(C#)		

	37	38	39	40	41
Left Hand	Th, 2 ←	Th, 2, 3, 4, 5	Th, 2, 3	Th, 3, 4, 5	Th, 3, 4
Right Hand	2(tr), 3	2, 3, 4, 5(Eb)	2(tr), 3(tr)		2

↑ separate and random trill-action
↑ (joint trill-action)

Ex. 5. Multiple-sonorities for flute (to be added to those listed in PNM, Vol. 5, No. 1 and Vol. 7, No. 1)