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Alternate fingerings for the flute: Paul Koonce's Escape tone and the possibilities of notation

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Alternate Fingerings for the Flute: 
Paul Koonce’s Escape Tone and the Possibilities of Notation

A Dissertation submitted in partial satisfaction of the requirements for the degree Doctor of Musical Arts

in

Contemporary Music Performance

by

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2012
The Dissertation of Kimberly A. Turney is approved, and is acceptable in quality and form for publication on microfilm and electronically.

Chair

University of California, San Diego

2012
# TABLE OF CONTENTS

Signature Page ......................................................................................................................... iii
Table of Contents ..................................................................................................................... iv
List of Figures ........................................................................................................................... v
Vita ........................................................................................................................................ vii
Abstract of the Dissertation ................................................................................................. viii
I. Introduction ......................................................................................................................... 1
II. Alternate Fingering Sources and Systems ........................................................................ 4
III. Koonce Notation ............................................................................................................... 11
IV. Application of Koonce Notation ....................................................................................... 16
V. Bibliography ....................................................................................................................... 33
LIST OF FIGURES

Figure 1: Yuasa, Reigaku (p. 6, line 8) ................................................................. 1
Figure 2: Saariaho, Laconisme De Láile (Notation Instructions) ................. 2
Figure 3: Saariaho, NoaNoa (p. 3, m. 114-116) .............................................. 2
Figure 4: Artaud, Present Day Flutes (p. 6) ...................................................... 5
Figure 5: Artaud, Present Day Flutes (p. 6) ...................................................... 5
Figure 6: Artaud, Present Day Flutes (p. 49) ..................................................... 6
Figure 7: Pellerite, A Modern Guide to Fingerings for the Flute (p. 54) ....... 7
Figure 8: Dick, The Other Flute (p. vi) ............................................................ 8
Figure 9: Howell, The Avant-Garde Flute (p. 42) .......................................... 8
Figure 10: Dick, The Other Flute (p. 72) .......................................................... 9
Figure 11: Howell, The Avant-Garde Flute (p. 66) ........................................... 9
Figure 12: Koonce, Escape Tone (p. 29) .......................................................... 12
Figure 13: Koonce, Escape Tone (p. 30) .......................................................... 13
Figure 14: Koonce, Escape Tone (p. 28) .......................................................... 15
Figure 15: Dick, The Other Flute (p. 72) .......................................................... 16
Figure 16: Renotation of Figure 15 (the Dick tablature system) ................. 17
Figure 17: Howell, The Avant-Garde Flute (p. 66) ........................................ 17
Figure 18: Renotation of Figure 17 (the Howell tablature system) ............ 18
Figure 19: Renotation of C# line in Koonce matrix ..................................... 18
Figure 20: Sciarrino, L'Opera Per Flauto: Fra I Testi Dedicati Alle Nubi (p. 31) ................................................................. 20

Figure 21: Sciarrino, L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi (p. 31) ................................................................. 21

Figure 22: Sciarrino, L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi (p. 32, lines 1-2) ......................................................... 22

Figure 23: Sciarrino, L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi (p. 35, line 4) .......................................................... 22

Figure 24: Application of 24 fingerings in Fra I Testi Dedicati Alle Nubi using Koonce notation ........................................... 24

Figure 25: First application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p. 32, lines 1-2) ......................... 25

Figure 26: First application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p. 35, line 4) .............................. 26

Figure 27: Koonce, Escape Tone (p. 29) ......................................................... 26

Figure 28: Alternate possibilities for notating the same pitches/fingering ........................................................................ 28

Figure 29: Second application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p. 32, lines 1-2) ...................... 29

Figure 30: Second application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p. 35, line 4) .......................... 30

Figure 31: Excerpt from second application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p. 32, line 1) ............. 30
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ABSTRACT OF THE DISSERTATION

Alternate Fingerings for the Flute: 
Paul Koonce’s Escape Tone and the Possibilities of Notation

by

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Doctor of Musical Arts

University of California, San Diego, 2012

Professor John Fonville, Chair

This dissertation explores the possibilities of the notation system used in Escape Tone by Paul Koonce. Alternate fingering sources and systems are discussed and examined, as well as the possibilities for the use of Koonce’s notation system in other works. The Koonce notation system is applied to Sciarrino’s L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi to see if it is a viable notation system for contemporary music.
I. Introduction

Altered fingerings are a common occurrence for performers of contemporary music. They are used in combination with standard fingerings to produce an array of new sounds. Without these, flutists and composers would be limited to a narrow vocabulary of standard flute fingerings and the notes they produce. Altered fingerings are modifications to standard fingerings used to produce a desired multiphonic, microtone or timbre. When playing a piece with these altered fingerings, the performer is required to learn a new set of fingerings. These fingerings come to the performer in many forms. Sometimes the composer will provide the fingering within the score, either near the specific altered note (See Figure 1) or within the instructions for the piece (See Figure 2). Other times, the performer is left to find the fingerings themselves using outside sources (See Figure 3).

![Figure 1: Yuasa, Reigaku (p. 6, line 8)](image)
The exact source used to find these fingerings is not always explained in the score, so the performer must search through the many sources available in order to find the appropriate fingering. At times this can be a frustrating and time consuming task. The reason these fingerings are not committed to memory, as they are in the case of standard fingerings, is due to the large number (thousands) of possibilities along with the
infrequency of use. There are a limited number of standard flute fingerings that performers use from the beginning of their flute playing. Obviously these are more easily committed to memory.
II. Altered Fingering Sources and Systems

There are many sources a performer seeks when looking for altered fingerings. The notation of altered fingerings generally falls into two categories. These are the number system, which is common in Europe and the tablature system, which is more commonly used in the United States.

The number system is a notation where each finger is assigned a specific number. Numbered one through five on each hand, with one being the thumb, these fingers and numbers obviously correspond to the keys on the flute. Five on the right hand has a system for the 3 keys that it uses. It is either referred to as 5, 5# or 5♭. There is no letter or number for the low B key on the foot joint. Similarly, one on the left hand can be referred to as 1 or 1♭ to differentiate between the two keys that it uses. There are also 3 keys assigned the letters A, B and C (See Figure 4 and Figure 5).
Figure 4: Artaud, Present Day Flutes (p. 6)

Figure 5: Artaud, Present Day Flutes (p. 6)
When a desired fingering is given, only the depressed numbers and/or letters are given (See Figure 6).

Figure 6: Artaud, Present Day Flutes (p. 49)

This can be quite confusing at times. This method of fingering notation is illustrated throughout the book Present Day Flutes by Pierre-Yves Artaud.

The tablature system is used by Robert Dick, Thomas Howell and James Pellerite in their books of altered fingerings. Pellerite uses pictures of the flute keys to explain the fingering (See Figure 7).
Figure 7: Pellerite, A Modern Guide to Fingerings for the Flute (p. 54)
While Dick and Howell use a series of circles to represent fingerings (See Figure 8 and Figure 9).

**Figure 8:** Dick, *The Other Flute* (p. vi)

**Figure 9:** Howell, *The Avant-Garde Flute* (p. 42)
A darkened or filled in circle represents the keys that are to be depressed (See Figure 10 and Figure 11). This is the method with which I am most familiar.

**Figure 10:** Dick, *The Other Flute* (p. 72)

**Figure 11:** Howell, *The Avant-Garde Flute* (p. 66)
Regardless of which system is used, the performer must write in each new set of fingerings in the score of the piece they are learning and reference that fingering instead of using the notated notes of the staff to derive the fingering. This is what I find to be the most difficult part about this notation system. The notes within the staff for the desired altered note give no clue as to the fingering for the desired note, only the resultant tone/tones to be heard. From an early point in learning to read music and play an instrument simultaneously, emphasis is put on reading the notes and knowing the fingerings from memory. Having to write in fingerings diverts attention away from this process. This can be a hindrance in the beginning, which slows down the learning process.
III. Koonce Notation

While studying the piece *Escape Tone* by Paul Koonce, I met with the inevitable task of writing in all of the altered fingerings throughout the piece. Instead of using one of the two methods described above, Koonce provides a matrix of microtonal fingerings in the back of the score (See Figure 12 and Figure 13).
After writing in a few of the fingerings, according to the chart provided, I started to notice a pattern to the system. This was unlike any notation system I had seen before. Very quickly I figured out how it worked, which eliminated the need for me to tediously write in every fingering. After understanding how the system worked, I was able to identify the desired fingering by looking at only the notation provided on the staff. Then I started to wonder why no one else has used this system, when it makes so much sense. Koonce explains his basis for his notational system within the score:

Another perspective of the fingerings is to view them as standard fingerings modified by the opening of one of their depressed keys. This key would correspond to the vent described above. This perspective is the basis for the notational system. In it, a regular notehead designated the standard fingering and the diamond above it specifies the fingering to be vented (Escape Tone, p.24).

This system still does not cover all possible fingerings. For this, Koonce modifies them in a way which is also very clear:

Fingerings which are neither standard nor from the microtonal segments are created by choosing a nearly identical fingering from the above sets and modifying it by adding or removing the appropriate keys. The keys are designated according to the symbols in the flute key legend (See Figure 14) below. ‘+’ and ‘-‘ signify depressing and undepressing keys, respectively. ‘+’ and ‘-‘ similarly apply to the G# and D# levers even though the effect on the tone hole is the opposite. A slash through keys 2 through 6 calls for the depressed rim only (Escape Tone, p.24).
Figure 14: Koonce, Escape Tone (p. 28)
IV. Application of Koonce System

The tablature notation can be more effectively renotated using the Koonce system. This system eliminates the need for the tablature notation in general. In Figure 16 and Figure 18 I have applied the Koonce system, according to the matrix, to the tablature notation examples from above.

![Diagram of tablature notation with Koonce system applied]

**Figure 15:** Dick, *The Other Flute* (p. 72)
Figure 16: Renotation of Figure 15 (the Dick tablature system)

Figure 17: Howell, The Avant-Garde Flute (p. 66)
A key part missing from the Koonce matrix is all of the possible sounding pitches that are achievable with each given fingering. Looking at the C# line (3rd row of Figure 12), it would be more effective if these sounding pitches were provided within the matrix.

Figure 18: Renotation of Figure 17 (the Howell tablature system)

Figure 19: Renotation of C# line in Koonce matrix
Providing these resultant tones within the matrix and the Koonce system would make it more desirable and practical to both performer and composer.

Wondering if this system is viable for use in other pieces, I looked at a piece which is very complicated to read due to the numerous altered fingerings. I wanted to see if it could be renotated using Koonce’s method. *Fra I Testi Dedicati Alle Nubi* by Salvatore Sciarrino is composed entirely of altered fingerings. The 24 fingerings are provided in the instructions and assigned a number or letter (See Figure 20 and Figure 21).
FRA I TESTI DEDICATI ALLE NUBI

Opera commissionata dal Salerno Festival
I grandi appuntamenti della musica 1990

AVVERTENZE

Suoni multipli artificiali, entro cerchi numerati in arabo.

PERFORMANCE NOTES

Multiple artificial tones, indicated by encircled Arabic numerals.

Le componenti interne di ciascun suono vanno ben equilibrate per un’emissione sicura, anche in vista dei passi più rapidi e articolati. Quando si richiede di mettere in rilievo alcune componenti, ciò è espresso in grandezza di note – le note piccole devono rimanere come di fondo. Nel caso di acciaccature, queste componenti secondarie vengono chiuse fra parentesi quadre.

HINWEISE

Künstliche multiple Klänge, in Kreisen mit arabischen Ziffern.

Alle inneren Bestandteile jedes Klanges sind gut auszugleichen zugunsten einer sicheren Emission, nicht zuletzt in Erwartung schneller und artikulierter Passagen. Wenn einige Bestandteile hervorgehoben werden sollen, so wird dies durch die Größe der Noten angegeben; die kleinen Noten müssen so im Hintergrund bleiben. Im Falle von Vorschlägen werden diese sekundären Bestandteile in eckigen Klamern angegeben.

\[
\frac{1}{4} = \text{Flatterzunge}
\]

\[
\frac{1}{3} = \text{flutter tonguing}
\]

\[
\frac{1}{2} = \text{Flatterzunge}
\]
21

Figure 21: Sciarrino, L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi (p. 31)
The number or letter is then written above the notes on the staff (See Figure 22 and Figure 23).

**Figure 22**: Sciarrino, *L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi* (p. 32, lines 1-2)

**Figure 23**: Sciarrino, *L’Opera Per Flauto: Fra I Testi Dedicati Alle Nubi* (p. 35, line 4)
This is a highly complicated piece, partly due to the fact that the performer must memorize these 24 complicated fingerings, which have no easily recognizable connection to the notes written on the staff. The performer spends more time looking at the numbers or letters above the staff than they do the notes on the staff.

My experimentation with applying the Koonce notation system to the Sciarrino piece proved to be successful, although not without fault in the beginning. The first realization that I did was not ideal (See Figure 24, Figure 25 and Figure 26).
Figure 24: Application of 24 fingerings in *Fra I Testi Dedicati Alle Nubi* using Koonce notation.
Figure 25: First application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p.32, lines 1-2)
The main issue with the first realization is that the notation only shows notation that indicates what the fingering should be. It is missing the resultant pitches, and this is crucial to the performer. Without these resultant tones, the performer does not know precisely what pitch/pitches are to be produced. Most altered fingerings can produce multiple pitches; therefore the desired one is the key to accuracy. This is the main problem with the Koonce fingering matrix. It only shows notation derived for the desired fingerings, not all of the pitches that are possible with each of those fingering combinations (See Figure 27).
This may be due to the fact that Koonce's system creates various possibilities. These choices are another challenge that I encountered while renotating the Sciarrino piece. There are multiple ways that one could notate the same desired fingering, especially if there is no exact match within Koonce's matrix (See Figure 28).
Figure 28: Altered possibilities for notating the same pitch/fingering

My second realization was an effort to deal with the issues that arose in the first realization (See Figure 29 and Figure 30).
Figure 29: Second application of Koonce notation to Sciarrino’s Fra I Testi Dedicati Alle Nubi (p.32, lines 1-2)
I included the resultant tones that Sciarrino wants with the Koonce notation. The end result gives the performer all the information necessary for the fingerings in one place (See Figure 31).

The performer derives the fingerings from the lower notes and the upper notes, the results. These two methods combined, Koonce fingering system
and desired resultant tones, allow the performer to read the music that is notated on the staff. Instead of purely memorizing an entirely new set of fingerings for each piece of music, the music can be read more effectively. This also eliminates the search for fingerings and the tedious task of writing each one of them in. If this notation system was more widely used for microtones, multiphonics and altered fingerings, the performers would become familiar with its workings very quickly. Pedagogically, this system of notation can make contemporary music more accessible to players unfamiliar with contemporary music and to people who are new to the notation of altered fingerings.

This experiment has proven to be a viable option for the notation of altered fingerings for flute. Sciarrino’s Fra i Testi Dedicati Alle Nubi can effectively be renotated and realized in a more comprehensive way using the system designed by Koonce. The integration of this system into compositions for flute would be a significant help to both performers and composers of new music. This would eliminate the confusion of the multiple systems that are used for altered fingerings as well as increase the efficiency of the performer. Although Paul Koonce derived this system of notation over twenty five years ago, it has yet to be incorporated into the general notation system of contemporary music. I think that this system is valuable and should be recognized as a system for notating altered
fingerings. Whether this is a useful system for all composers to use is still to be determined. Not all contemporary flute music needs to be renotated using this system, although some would become more accessible if done so. This is a subject I will continue to pursue given that I do think that the Koonce notation system can be very beneficial and should be used by both performers and composers.
V. Bibliography


