

ABSTRACT

Title of dissertation: **NAUTILUS: FOR FLUTE/PICCOLO AND
COMPUTER-PROCESSED SOUND**

Yi-Chen Chen, Doctor of Musical Arts, 2006

Dissertation directed by: **Professor Robert Gibson, School of Music**

Nautilus for flute/piccolo, and computer-generated sound was completed in the spring of 2006. The electronic score for the piece was realized in Computer Music Studio B at University of Maryland.

As the title suggests, this piece is in some ways a musical representation of the structure of a chambered nautilus shell and the sound of this structure when one "listens" to the shell by holding near the ear. An analog to the spiral structure of the nautilus shell is created by using trills and rising and falling glissandi in the flute and the electronic score. Some extended techniques of the flute, such as tongue-stopped notes and "jet whistle" sounds create timbres that resemble speaking directly into a nautilus shell.

Nautilus can be roughly divided into four sections: the first section, which is also the longest section, opens with long and expressive phrases, and gradually introduces shorter and more rhythmic figures. In the second section, the flutist changes to piccolo. This is the most energetic and intense section, even somewhat agitated at times. The third section is a flute solo. The rapid shifts between fast-run figures and lyrical phrases creates a contradictory feeling, and a sense of tension, which is eventually resolved in the last section. The last section is tranquil and recalls the character of the opening section, leading to the conclusion.

NAUTILUS: FOR FLUTE/PICCOLO AND COMPUTER PROCESSED SOUND

by

Yi-Chen Chen

Thesis submitted to the Faculty of the Graduate School of the
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Without whom, I would never be able to pursue my studies in composition.

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Performance instruction:

Ⓣ



Tongue-stop



Key-slap articulating pitch



Key-slap alone



Key-slap with embouchure-hole stopped



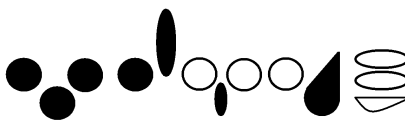
Jet whistle



Key-slap with random fingering



fingering:



Nautilus

for flute/piccolo and computer-processed sound

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Flute

Time Line

Computer-Processed Sound

$\text{♩} = 60$

mp

6"

17"

(key-slap sound)

(processed flute sound)

Fl.

Time

C.P. Sound

(key-slap sound)

(key-slap sound)

$\text{♩} = 82$ (processed flute sound)

f

3

3

3

3

(flute-like glissando)

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Fl.

Time 47" 1'07"

C.P. Sound (processed flute sound) key clicks

Fl. $\text{♩} = 60$ *mp* 3 3

Time 1'21"

C.P. Sound

Fl. *mp* 3 7 *ff* 6 *fff* 1'41"

Time

C.P. Sound (processed flute sound) 3 3

Fl. $\text{♩} = 102$ *f* 3 1'51"

Time

C.P. Sound 3

Fl. *p* ³ *f*

Time

C.P. Sound

Fl. *mf* ³ ³ ³

Time 2'13"

C.P. Sound (processed flute sound) ³ ³

Fl.

Time 2'30"

C.P. Sound (processed flute sound)

Fl.

Time

C.P. Sound

Fl.

Time

2'52"

(Roll)

key clicks trill

(Roll)

key clicks trill

C.P.
Sound

Fl.

$\text{♩} = 98$

mf

Time

3'00"

key clicks trill cont.

C.P.
Sound

Fl.

f

mp

Time

key clicks trill cont.

(processed flute sound)

C.P.
Sound

Fl.

pp

f

Time

(sustained bell-like sound)

(Strike)

C.P.
Sound

Fl. *p* *f*

Time

C.P. Sound (sustained bell-like sound)

Fl. *f*

Time

C.P. Sound

3'37"

Fl.

Time

C.P. Sound (rumbling sound)


3'46"

Fl. *p*

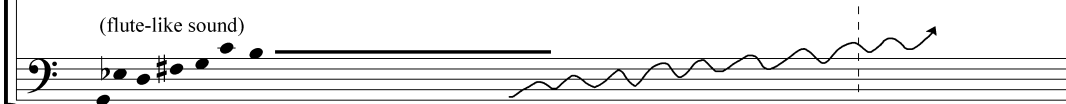
Time


C.P. Sound

3'55" (Metallic)

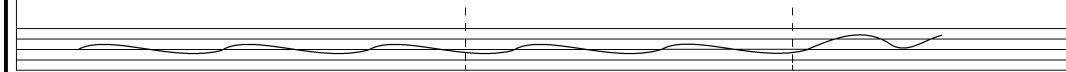
Fl. 

Time 4'11"

C.P. Sound  (flute-like sound)

Fl. 

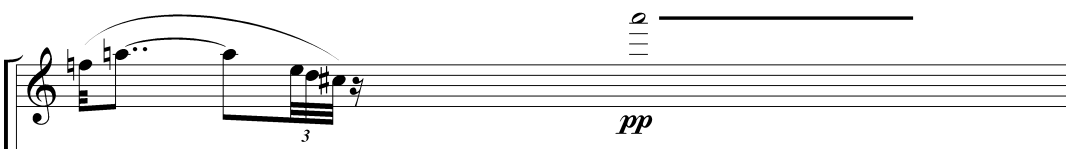
Time

C.P. Sound 

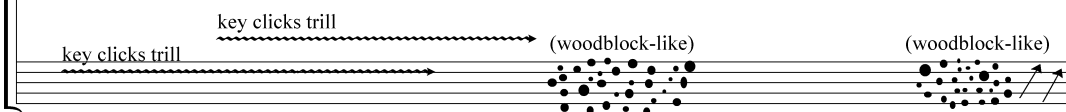
Fl. 

Time

C.P. Sound  (flute-like sound)

Fl. 

Time 4'57"

C.P. Sound  key clicks trill (woodblock-like) (woodblock-like)

Fl. *pp* *ff* *niente* *Change to piccolo*

Time 5'09" 5'18"

C.P. Sound (very soft)

Piccolo *mf* $\text{♩} = 72$

Time 5'35"

C.P. Sound (Metallic)

Picc. *f* *mf* 3 3 3


Time 5'47"

C.P. Sound (Metallic) (Metallic)

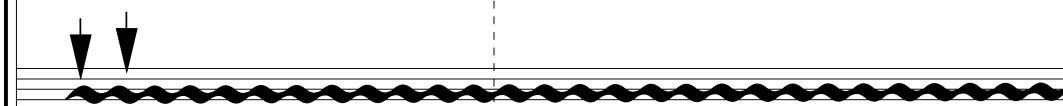
Picc. 6 5 *p*


Time

C.P. Sound

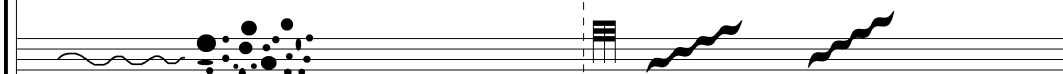
Picc. 


Time 6'05"

C.P. Sound 


Picc. 


Time 6'15"

C.P. Sound 

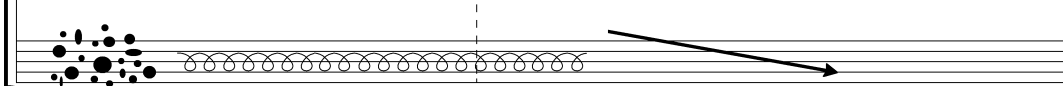
Picc. 

Time

C.P. Sound 

Picc. 

Time (woodblock roll)

C.P. Sound 

Picc. *ff* *mf* 6'37"

Time

C.P. Sound (flute glissando)

Picc. *f* *mp*

Time

C.P. Sound (pulse-like)

Picc.

Time

C.P. Sound

Picc. *mf* *f*

Time

C.P. Sound

Change to Flute

wait until the electronic score stops,
then start the flute solo

Time 7'17" 7'46"

C.P.
Sound

Freely (♩ = ca. 60)

Flute

f *mp* *cresc.* *f* *mp* *ff* *p*

ca. 9'22"

Flute

Time

9'26" 9'35"

C.P.
Sound

Fl.

Time

9'53"

C.P.
Sound

(bell-like sound) (processed flute sound) key clicks trill

Fl.

Time

10'07"

C.P.
Sound

key clicks trill continuing with key-clicks

Fl.

Time

10'23"

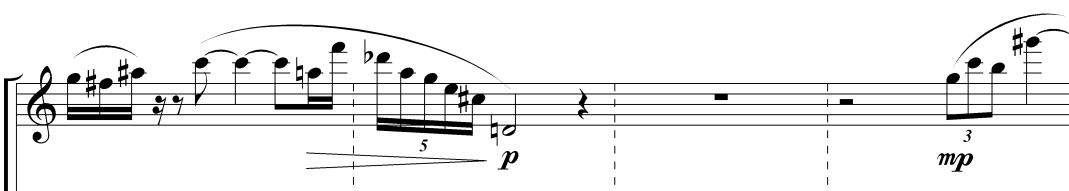
C.P.
Sound

key clicks trill

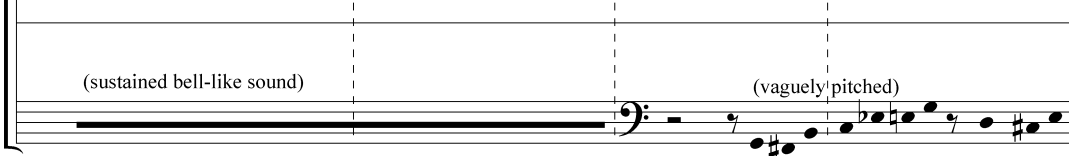
Fl. 


Time

C.P. Sound  (sustained bell-like sound)

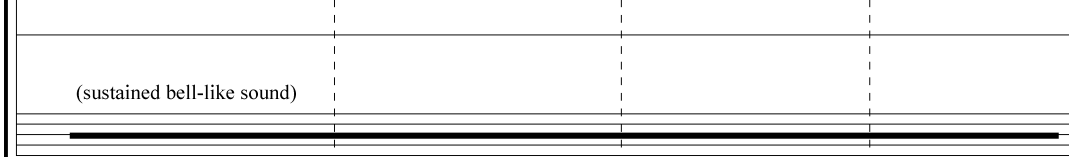
Fl. 

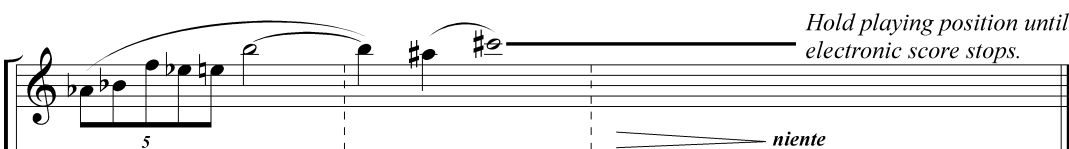
Time

C.P. Sound  (sustained bell-like sound) (vaguely pitched)

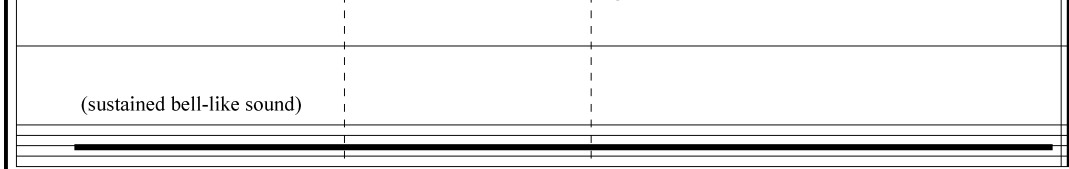
Fl. 

Time

C.P. Sound  (sustained bell-like sound)

Fl. 

Time

C.P. Sound  (sustained bell-like sound)

Hold playing position until electronic score stops.