A Performer's Guide to the Solo Flute Works of Kaija Saariaho:

Laconisme de l'aile and NoaNoa

by

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A Research Paper Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Musical Arts

Approved March 2013 by the
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May 2013
ABSTRACT

The works of premier Finnish composer Kaija Saariaho demonstrate a fascination with the exploration and expansion of timbral possibilities. This project explores Laconisme de l’aile and NoaNoa, the only two of her works written for solo C-flute. Saariaho has developed a unique compositional style for the flute, characterized by extremes of color which are expressed through extended techniques such as the integration of the voice, with and without text, into the music, the exploration of “noise,” the transformation between different timbres, and the use of electronic effects. Laconisme de l’aile (1982) is a dramatic and passionate work filled with lyrical gestures and intriguing timbres with optional electronic effects, and is an excellent introduction to the composer’s writing for the flute. NoaNoa (1992) is characteristic of her mature compositional style. Like many of her later works, the electronic aspect of the work is integral to the piece.

Saariaho’s exploration of the timbral spectrum of the flute has resulted in a complex and unusual style of notation, making these works somewhat inaccessible for performers. Additionally, the technological requirements for NoaNoa make the work both intimidating and impossible to perform without either extensive technical knowledge or consultation with someone who has the necessary technical expertise. Through a detailed performance guide and reference recordings of both works, this project aims to make these two works accessible. All technical specifications are explained and the performance instructions address notation as well execution of all designated effects. Additionally, instructions for the electronic portion of NoaNoa allow flutists to perform the work with minimal assistance.
ACKNOWLEDGMENTS

I am grateful for the support of my committee members: Elizabeth Buck, Robert Spring, Gary Hill, Martin Schuring and Glenn Hackbarth. I am also indebted to sound and recording engineer Mack McLaughlin of MackAudio and to flutist Margaret Lancaster for their assistance.
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KAIJA SAARIAHO

BIOGRAPHY, MUSICAL LANGUAGE, AND WORKS FOR THE FLUTE

Kaija Saariaho (b. 1952), a premier Finnish composer, studied at the Sibelius Academy in Helsinki from 1976-1981 with Paavo Heininen and in 1981 with both Brian Ferneyhough and Klaus Huber at the Statliche Hochschule für Musik in Freiburg, Germany, as well as at the International Summer Courses for New Music in Darmstadt, Germany. Saariaho’s early works are quite melodic, but by the 1980’s the focus of her compositions shifts from melody to tone color. While rhythmic elements and melodic gestures exist in her works, the search for new colors is more prominent in her writing than melodic line or rhythmic development, leading to the development of new instrumental techniques. Her music is also often inspired by non-musical sources, most notably literature. Further studies beginning in 1982 at IRCAM (Institute de Récherche et de Coordination Acoustique-Musique) in Paris, an institute dedicated to the study and performance of electro-acoustical music, built upon her existing fascination with the exploration of timbre and color. Later works reflect the influence of her time at IRCAM and her mature compositional style is often characterized by the incorporation of electronic elements. Saariaho has received numerous accolades, including the Prix Italia, the Musical Award of the North Council, and the Musical America Composer of the Year Award. Her compositions span multiple genres and include solo works, electronic works, chamber music on both a small and large scale, orchestral works, ballet music, opera, and musical theater.

**INTRODUCTION TO THE ELECTRONIC EFFECTS**

A basic understanding of the electronic effects employed by Saariaho, as well as of the hardware and software used to produce them, is extremely beneficial when performing her solo flute works. Two predominant effects in both *Laconisme de l’aile* and *NoaNoa* are the use of reverberation and of harmonization (in this case referring to microtonal pitch-shifting). These interactive electronics are used in varying levels and combinations with the live flute in both pieces, as well as with pre-recorded sound tracks in *NoaNoa*. A reverberator (generally referred to as reverb unit) is a device used to
simulate the series of sound reflections or echoes that would occur naturally in a given space. A harmonizer is a device that takes an incoming audio signal, shifts the pitch by a pre-determined value, and recombines it with the original signal to produce a sound that is a combination of all of these pitches.

The optional electronic part for *Laconisme de l’aile* calls for a digital reverb unit with variable reverb time, meaning that the amount of reverberation (the length of time the sound will echo) is adjustable. It also calls for a harmonizer that can be set to shift one quarter tone above the given pitch and preferably one quarter tone both above and below the given pitch. These units do not function alone, but must be connected to a mixing console. Often called a sound or mixing board or just “mixer” or “board”, the console is essentially a control panel that interfaces all of the equipment in use and is where volume levels are set. In other words, it both receives input signals from a microphone or another source and sends a signal to the speaker system to produce sound. Using a mixing console generally requires a significant amount of knowledge and training.

There has been a recent shift in technology and electronic music composition towards a software-based structure, allowing performers and composers access to sounds once only possible through extremely complicated programming or expensive hardware. In *NoaNoa*, the electronic effects have been internally created, eliminating the need to use multiple effects units. Instead, the performer runs a software “patch,” a program which enables the triggering of the effects. While the effects can be activated using the
spacebar on the computer keyboard, a pedaled MIDI controller\(^1\) allows the performer to trigger the electronic events instead of relying on an assistant. These effects are often referred to as “live” or “integrative” electronics in that the triggering of the events is dictated by the performer so that the processing occurs in real time. Some models of MIDI pedals require a separate piece of hardware, a MIDI interface, which enables the controller to communicate with the software. Other models have this function integrated. In addition to the software patch and a pedaled MIDI controller (and possible MIDI interface), *NoaNoa* also requires an Apple Macintosh computer with the Mac OS X operating system, at least one microphone, and a speaker system with at least two speakers. One additional piece of hardware, an audio interface, is needed in order for the input from the flute microphone to communicate with the software. This audio interface is essentially the “hub” for all audio signals, both in and out. The setup required for each piece will be discussed in more detail below and diagrams are provided in the appendices.

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\(^1\) MIDI, or Musical Instrument Digital Interface, is a technology which enables musical instruments and computers to communicate. It is not comprised of sounds, but of coded messages. A pedaled MIDI controller is a foot pedal that sends signals to the computer in MIDI code.
Saariaho began writing \textit{Laconisme de l’aile} in 1981, during the time that she was studying composition with Brian Ferneyhough and Klaus Huber at the Hochschule für Musik in Freiburg, Germany. She associated the flute with the stereotypical image of birds, as well as with legends and primitive music and was intrigued by the full spectrum of the flute’s tonal possibilities. She had also been experimenting with incorporating “noise” (such as breathy tones) into a flute work and the result was \textit{Laconisme de l’aile}.\footnote{Camilla Hoitenga, \textit{The Flute Music of Kaija Saariaho: Some Notes on the Musical Language} (2011) [article on-line]; available from \url{http://hoitenga.com/site/flute-music-of-kaija-saariaho}; accessed 15 September, 2012.}

Dedicated to Finnish flutist Anne Raitio-Eirola, it was completed and published in Paris in 1982 while she was a student at the IRCAM Research Institute studying computer music. This piece, however, was not conceived at the computer but was composed and written entirely “by hand.”\footnote{Manuela Wiesler, Liner Notes, \textit{Oiseaux Tendres}, BIS-CD-689.} The title translates to “Brevity of the Wing” and is from a passage that both opens the piece and serves as the basis for the musical material. The text is a fragment of a poem by Nobel Prize-winning French poet and diplomat St. Jean Perse (1887-1975), from a collection entitled \textit{Oiseaux (Birds)}. The poem was not the inspiration for the piece, but instead described the images that the composer had already imagined: “that of birds, fighting gravity, flying away, secret and immortal.”\footnote{Hoitenga.} The flute
acoustically imitates the manner in which birds fly, focusing not so much on birdsong as is typical of much flute music, but instead on “the lines they draw in the sky when flying.”

$Ignorants de leur ombre, et ne sachant de mort que ce qui s’en consume d’immortel au bruit lointain des grandes eaux, ils passent, nous laissant, et nous ne sommes plus les mêmes. Ils sont l’espace traversé d’une seule pensée. Laconisme de l’aile!$

Ignorant of their shadow, knowing of death only that immortal part which is consumed in the distant clamour of great waters, they pass and leave us and we are no longer the same. They are the space traversed by a single thought. Laconism of the wing!

Figure 1. Text Fragment from *Oiseaux*, by St. Jean Perse

The piece opens with a declamation of the text up through the first letter of the word *traversé*, which serves as a transition from the spoken portion into the introduction of the flute sound and then into the first iteration of a key element of the work: an ascending scale. This scale marks the end of the short first section. The following section is characterized by the interplay of Tempo I, which is always unmeasured, and Tempo II, which is measured and somewhat faster. Each tempo is associated with a distinct character. This second section is the longest of the three and is characterized by interruptions of musical gestures and by the transformation of one type of sound into another. The text resumes at the end of this middle section, again on a repeated letter “t,” leading the transition from the flute back into text. The symmetry of the form up to this point highlights the attention to form and structure characteristic of Saariaho’s compositional style. The third and final section is based upon the gesture of the ascending

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5 Wiesler.
6 Hoitenga.
7 Ibid.
scale, possibly representing the final sentence of the text, “They are space traversed by a single thought.” (The phrase “Laconisme de l’aile” is not used other than in the title.)

Laconisme de l’aile consists of many traditional aspects of flute playing, but the composer also incorporates a wide range of extended techniques such as breathy or airy tones, key clicks or slaps, glissandi and pitch bends, microtonal pitches, exaggerated vibrato, multiphonics, “underpressured” and “overpressured” playing, inhaling and exhaling into the instrument, and the use of the voice both whispered and spoken as well as sung. This piece is significant in Saariaho’s writing in that it is the first flute composition in which she incorporates all of these techniques into a musical language, which eventually becomes distinctive of her compositional approach to the flute. The piece can be performed either as a solo flute piece or with optional electronic effects.

PERFORMANCE GUIDE

Note: The following performance guide is intended to accompany a score of the work.

Saariaho’s notation in this piece borrows from a treatise on contemporary flute techniques by flutist Pierre-Yves Artaud designed both for performers and composers. The composer’s notes for performance, described on a Notation page included in the score, are quite specific. The notation is therefore only addressed when necessary for clarity. It is important to note that while the Notation indicates both “tongue pizzicato” and “tongue pizzicato combined with key slap,” neither one of these effects is employed

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8 Ibid.

in the piece. Additionally, there is a very subtle difference between the round noteheads used to designate a breathy tone, and the oval noteheads designating a standard tone.

Lines 1-5: The introduction is pure recitation of text, spoken without the instrument. It is therefore imperative that pronunciation is correct and the words enunciated, particularly before the transition into a loud whisper when the speaking becomes “successively less understandable” as the words are “gradually to be bound together to form a single line,” as indicated. A gradual change should be made from voiced recitation to a forced whisper in the first half of the 3rd line. The flute is slowly brought towards the lips while whispering, although not close enough to resonate until the syllable “-pace.” In line 4, a sufficient breath or breaths should be taken prior to beginning the repetition of the letter “t” to ensure a continuous and natural progression from the whispered consonant to the flutter tongue, as well as from the breathy to the standard tone, and then into the fermata. The pitches leading up to the fermata in line 5 should be played as a scale, in the order notated, despite the noteheads not being attached to the beam. Additionally, the marking of legato is best interpreted as slurred. This ascending scale marks the end of the introduction and should grow out of the sustained D111 without any break. To facilitate this, a breath can be taken before ils, or before or after l’espace. There is the possibility of taking more than one of these breaths. However, one should be aware of keeping the word intact.

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11 D1 designates the lowest octave of the flute. Subsequent octaves will be designated with a 2, 3, or 4, respectively.
Lines 5 (at Tempo I)-6: The emphasis should be on the pitches but with the key clicks as loud as possible without interrupting the melodic line. One method of fingering the key clicks is to click with the pinky of the right hand (R5) either on the Eb key or on multiple keys of the foot joint throughout the passage, adding additional fingers for the key clicking in line 6. The advantage of this approach is that the pitch remains stable and only one finger (R5) is used for clicking. However, the coordination required to maintain continuous movement of R5 while shifting other fingers may be very challenging for some flutists. Another solution is to alternate which finger executes the key clicks as the pitches change. A suggested fingering sequence is to click the ring finger of the right hand (R4) on the D key while playing F1, then click the middle finger (R3) on the E key while playing Gb1, then resume clicking R4 for the second F1, briefly suspend the key clicks (as notated) for D1, and so forth until line 6 at which point all fingers on the right hand can be employed.

Line 6 is the first instance of a glissando, a gesture that recurs throughout the remainder of the piece. This technique refers to a slide between two pitches, either ascending or descending. Glissandi are often also referred to as pitch bends, but a pitch bend can be generally limited to a smaller interval while a glissando may refer to a slide across a larger interval. This effect can be executed one of two ways. One type is the fingered pitch bend, which involves sliding one or more fingers to cover or uncover a tone-hole. Another type is done with the embouchure. It can either be accomplished using the flexibility of the lips alone, or can be exaggerated by tilting the head downwards or rotating the instrument towards the lips. This first glissando is best achieved with the
embouchure so that the fingers of the right hand (R4 and R5) are free to continue the key clicks. Following the glissando, all keys on the right hand can again be used until the 16th note figure, at which point the alternation should be R4 and R5 on the D and Eb keys to R3 on the E key and back to R4 and R5. The second glissando, also in line 6, is difficult to produce with the embouchure but may be executed as a fingered glissando. One effective fingering is L234 and R1 with the head and chin tilted downwards for the B1 to counteract the sharp tendency of this alternate fingering, then slide L3, L4, and R1 to gradually uncover the holes and then entirely lift off the keys with a coordinated quick lift of the head and chin back to the normal position for C2. There are many key click options for the last figure in line 6, including any fingers on the right hand and L4 on the G key. The simplest approach is to use the fingers of right hand in random order for the key clicks and then gradually change to fingerling the notated pitches at the end of the line before the final change to the “Aeolian sounds,” also called breath tones.

Lines 7-9: The focus of this section is the interplay between the top line, initially comprised of a melody in standard tone without any vibrato and the bottom line, which begins on the “noise” end of the tonal spectrum, employing effects such as the key clicks and Aeolian sounds. This dual texture is actually introduced at Tempo I in line 5 with the contrast between the lyrical melody and the key clicks, but the opposition of the two qualities becomes more apparent with the introduction of the breath sounds leading into line 7 and in the successive manner in which the voices interrupt each other. Not only do these ideas interrupt each other, but the dual textures dovetail in line 8, with the top line devolving into noise as the flutter tongue is added and the bottom line evolving into
focused sound. This contributes to the symmetrical form of the work from the beginning to halfway through line 26. Throughout this portion of the piece, the different characters of the two lines and the polyphonic nature of the writing should be brought out as much as possible.

The marking of legatissimo from line 5 is still in effect for lines 7 through 9, which can be interpreted as either slurred and smooth or as lightly articulated as in portamento. The gradual change from breath tones to key clicks at the beginning of line 8 is most easily accomplished by first playing all of the notated breath tones, which can be played in any order, and then limiting to just alternating Eb1 and D1 before stopping the air flow. The final key clicks in line 8 are challenging to bring out because they occur at the same time as a played Eb1 and D1, making it impossible to click with any finger other than R5 without changing these pitches. The lack of resonance when clicking only the Eb key makes these key clicks the least audible in the piece. This does not pose as much of a problem if performing the electronic version of the piece, with a microphone and amplification. When playing acoustically, one possible solution is to click additional keys on the foot joint with R5.

Line 10: There is no slash at the stem line of the figure in the first measure of line 10 indicating that the figure should be played quickly, nor is there a change in the spacing of the lines designating the repeated G1. The intensity leading into the first iteration of a Tempo II section is therefore not accomplished through speed or an accelerando, but

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instead through the crescendo and the increase in the “overpressured” tone. The introduction of Tempo II is the first instance in which vibrato is indicated.

Lines 11-13: At the Tempo I, the glissando from C#2 is achieved with the embouchure or with the tilting of the head or instrument. The glissando in the second measure of line 12 may be fingered by slowly sliding L3 and L4 off of the A and G keys. The slash indicating that the notes should be played quickly is missing on the group of notes just after the glissando.\(^\text{13}\) (The Notation page indicates that groups such as this one should be played “as quickly as possible,” but instead of taking this literally, the groups of notes with a slash mark should be interpreted as somewhat irregular and out of rhythm.)\(^\text{14}\) The multiphonic in this line is simply the result of under-blowing the D3 so that both pitches sound. To play a smooth glissando from F2 to E2 in the final measure of line 12, depress R3 on the rim of the E key and gradually slide the finger to cover the tone-hole. The gradual transition in line 13 from staccato pitches with normal tone to legato with breathy tone is aided by changing the articulation to legato prior to changing the sound.

Lines 13 (at Tempo I)-14: It is preferable to lead into the D1 at the Tempo I and to breathe after it than to break the line by breathing prior to it. The legatissimo marking can be interpreted as slurred but tonguing as smoothly as possible assists in bringing out the line even with multiple breaths, and offers some contrast with the slurred material in Tempo II. There are several options for breaths in the first measure of line 14, but care

\(^\text{13}\) Ibid.

\(^\text{14}\) Ibid.
must be taken to keep the line moving forward. A breath can also be taken between the first and second measures but the line should carry over the breath and into the Tempo II.

Lines 14 (last measure)-15: The first introduction of singing while playing occurs at the very end of line 14. Once the E1 fades out, the voice carries without any breaks to the indicated fade out in line 15. The best option for a breath is to break the slur in the last measure of line 14 and breathe between the C#2 and the E1. The figure in the first measure of line 15 should also have a slash mark at the stem line, indicating the notes should be played rapidly.\textsuperscript{15} When the simultaneous singing and playing passage ends on the E1 in the second measure of line 15, the flute sound should be resumed with full and natural \textit{vibrato}.

Lines 16-17: Saariaho does not make any fingering suggestions for the timbral trills introduced at this point in the piece, but states that three clearly different fingerings with different colors should be selected. There are numerous options for alternate fingerings and even more options for fingering sequences. A simple yet effective sequence for the timbral trill on E2 in line 16 is to start on the standard fingering, add the second trill key, return to the standard fingering and then vent the first finger of the left hand. This is easy enough that it can be repeated several times rapidly, creating a fluid transition into the subsequent trill. The possible fingerings for G2 in line 17 are slightly more difficult to execute because they require changing more fingerings, but the slower rate of color

\textsuperscript{15} Ibid.
change is in character with the pace of the note changes in this line. One option is to alternate between the standard fingering, L12345/R2345 and L1235/R235 in any order.

Line 18: The color change on B1 in the third measure of line 18 is brief, so a quick fingering sequence requiring few changes is preferable. A suggested solution is to begin with the standard fingering, move to L134/R5, and change to L234/R234, creating a very easy transition into the D2 of the following measure.

Line 19: Producing a descending vocal glissando while playing an ascending line on the flute may be challenging. If this is the case, one possibility is to follow the played pitches with the voice to the Ab1, complete the vocal glissando to the Eb1 while playing the repeated Bb1’s, then sustain the sung Eb1 for the final two played notes. The slight pause in the glissando is virtually imperceptible when done rapidly and with fluidity. The two harmonics for D3 and Ab2 can be played by finger ing D1 and Db1, respectively, creating an easy transition to and from the surrounding pitches. The recitation of text just before the Tempo II measure should be whispered across the flute so that the F1 Aeolian tone still resonates.

Line 20: By this point in the piece, the contrast of noise versus sound becomes increasingly fragmented as the alternation of the two textures becomes more rapid and the distinct characters of each become blurred. The exhalations and the inhalation into the flute with the lips covering the hole (notated as filled-in triangles) need to be quite forceful for the effect to be distinct from the Aeolian sounds. The instrument may be gradually rolled back to a normal position following the final exhalation so that the
breathy tone can emerge from the forced exhalation of air. The rest in the second measure is a good place for a large breath so that the sung pitch is continuous to the end of the line. At this point a quick breath can be taken if needed, as long as it does not disrupt the continuity of the sung pitch from line 20 to line 21. Again, there is a missing slash at the stem line on the last figure of the line.16

Line 21: The transition from the inhalation to the played pitch should be with little to no break and is executed much like the transition from exhalation to breathy tone in the previous line. The key clicks in the subsequent figure, which is also missing a slash at the stem line,17 are very audible when using the ring finger of the left hand (L4) on the G key to produce the clicks. Using this key creates more resonance than the keys on the right hand and is acceptable in this instance because it does not change the designated pitches. The transition from key clicks to Aeolian sounds is smoother if the initial breath tones are slightly separated to mimic the separate and spaced nature of the clicks. If a breath is needed before the first pitch of line 22, it can be taken before the final note of line 21 instead of after so that the F#3 clearly belongs to the preceding figure.

Lines 22-23: The first group of moving notes is also missing a slash at the stem line.18 The key clicks in this group may be produced by clicking L4 on the G key. If this cannot be done rapidly and cleanly, the alternative is to treat the last two repeated pitches as a trill and click the middle finger of the right hand (R3) loudly. The resulting resonance

16 Ibid.
17 Ibid.
18 Ibid.
makes the F1 audible in the key clicks. Following the inhalation, the key clicks begin with R3 on the E key, transitioning to R2 on the F key when F#1 is fingered. A full breath should be taken after the sung pitch so that the phrase can continue uninterrupted until the completion of Aeolian sounds in line 23.

Line 23 marks the high point of the piece in terms of intensity. All effects should be exaggerated as much as possible. The sustained pitch, whispered and repeated “ssss,” and the key clicks are virtually impossible to produce simultaneously because producing the notated key clicks would produce other pitches than the sustained F#3. One solution is to fade out on the sustained pitch slightly early while speeding up the crescendo of the key clicks so that the transition is barely noticeable. The whispered interruptions should continue at full volume and without loss in speed until the key clicks have reached their full volume. The second half of line 23 is comprised of extreme dynamic contrasts, which are most effective if the marking of sempre legato is interpreted as slurred. The marking of “etc.” indicates that extreme swells in dynamic should be continued until the final diminuendo to pianissimo at the end of the line.

Lines 24-26: The legato pitches may still be played slurred. A full breath should be taken prior to the C#3 leading into the glissando so that no additional breaths are needed until the re-introduction of spoken text. The aforementioned C#3 can be fingered as L134/R45 with the head and chin tilted downwards to counteract the sharp tendency of this fingerling, and then R4 lifted while resuming a normal head position. To achieve the multiphonic, add R234 (a number that is struck through indicates that the key should be depressed without covering the hole) and incrementally drop the air speed and slightly
loosen the embouchure to produce the notated pitches. A breath can be taken before the word *traversé*. In line 26 the whisper can gradually change to a loud speaking voice.

Lines 26 (after the text)-38: This is the third and final large section of the piece. The ascending scales, while not all notated as slurred, should be performed all slurred. These scales should be fluid and always moving forward but not so rapid as to make it difficult to hear the quarter tones as they are introduced. The first seven scales all end on the same pitch, G3, each with different indications for dynamic and length, and in some cases an additional effect such as very wide *vibrato* or a *glissando*. These G3’s should be practiced separately to ensure that each is played accurately as notated whether as tenuto, accented, stressed, or changed in volume.\(^{19}\) Another useful practice technique to achieve evenness and fluidity in the scales is to group the notes into smaller units, such as twos, threes, fours, and fives.

Microtones, specifically quarter tones (pitches which fall halfway between the half-steps of the chromatic scale) are introduced one at a time, beginning in line 28. The options that offer the easiest fingerings, with the least finger movement and contrary motion, are depicted in Figure 2.

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F#: L234/R2345
F: L124/R25
E#: L124/R235
D#: L1345/R45
D: L1234/R23
C#: L134/R45
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Figure 2- Suggested Quarter Tone Fingerings

\(^{19}\) Ibid.
The glissando at the end of line 29 is initiated by tilting the head and chin downward, but is made easier by adding R3 or R4 on the rims of the E and D keys without covering the holes. The same technique can be used on the first glissando of line 30, although only R4 will work in this case since R3 is already depressed. In line 31, L3 can be used on the A key in the same manner described above, R2 on the F key in line 34, and in line 35, R2 on the rim of the F key without covering the hole.

The glissandi marked in lines 35 and 37 can either be interpreted as a continuation of the fingered scales (the absence of noteheads may imply for these scales to continue as previously written) or as actual glissandi, either by sliding the fingers or with the embouchure. One argument for continuing the fingered scales in line 35 is that the gesture of the ascending scale followed by a sustained note does not end until the middle of line 36. In line 37 the glissandi appear with shorter frequency of delivery, making the finger-slide option preferable. The sustained pitches are developed through the first half of line 36, at which point the longest held note of this section transitions from a D1 in line 36 into whistle tones, marking the closing section of the piece. If a breath is needed in line 36, it is best to reach C1, and then breathe before the whistle tones. The whistle tones should be played while fingerling C1, whether the pitch is audible or not.

OPTIONAL ELECTRONICS

Laconisme de l’aile was originally conceived for flute alone with no electronic effects, but when programmed on a recital of all electronic music given by flutist Camilla Hoitenga in Paris, the composer chose to add a layer of effects in order to prevent having
only one acoustic piece on the concert. The piece was subsequently published with indications for an electronic part, although this aspect remains optional. The author recorded this piece without electronics, yet she also created a version with the notated effects. Although the manner in which these effects were created differs from the instructions for live performance given below, the result is the same. An additional option, a video developed by Jean-Baptiste Barrière, Pierre-Jean Bouyer, and Isabelle Barrière, has since been developed. However, this video was intended for use as part of a visual concert where the whole program has accompanying live video. It also requires a complex technical set-up and a multi-person team.

The effects notated in the score consist of reverberation, or reverb, and harmonization (microtonal shifting). The level changes of each effect are indicated by percentages. The technical requirements for performance are at least one microphone and two speakers for amplification, a digital reverb unit with multiple options, a harmonizer (such as a Yamaha SPX90 or REV5) and a mixing console. Ideally, a live performance is done with two microphones to amplify the softer extended techniques on the flute—one microphone placed near the headjoint towards the embouchure hole and the other near the lower end of the body, towards the F, E, and D keys.

The technical setup for a live performance is shown in Appendix I, and an expanded view of the channels on the mixing console is depicted in Appendix II. (Each piece of equipment is assigned a discrete row of controls, called a channel.) “Dry” flute
refers to the flute sound as received by the console, devoid of all effects. The harmonizer
and reverb units have multiple connections to the board (both input and output) because
the audio signal is sent from the board to the units, processed within them, returned to the
board, and ultimately sent out through the speaker system. With this setup, it is necessary
to have assistance in live performance, preferably by an audio engineer. The engineer
must not only have the expertise to run the technical side of the performance, but must
also be able to read the score in order to make adjustments in the levels of the effects at
the proper times as notated in the score.

The harmonizers suggested by the composer (Yamaha SPX90 or REV5) are quite
outdated and can be difficult to obtain. Of the two, the Yamaha unit is more recent and
easier to use. It is also possible to use newer technology. Examples of more current
harmonizers include the Yamaha SPX2000 and the Lexicon PCM91. Instead of a
separate piece of equipment, it is currently more common to use a harmonizer “plugin,”
which cannot stand alone, but must be used in conjunction with either an audio
workstation such as ProTools\textsuperscript{23} or with software such as a program called Max\textsuperscript{24}, which
will be discussed in more detail in the chapter entitled \textit{NoaNoa}. The version of
\textit{Laconisme de l’aile} with electronics on the reference recording was created by using a
plugin to apply the effects to the existing recording. This required programming of the
effects into the software by an audio engineer. In an effort to stay true to the composer’s
intentions, the reference recording was done with a plugin called Waves UltraPitch that

\textsuperscript{23} ProTools is a computer-based system designed specifically for recording, editing, and playing-back
digital audio.

\textsuperscript{24} Max, now called Max/MSP/Jitter, is a software program created for computer music and multimedia
developed at IRCAM and owned by the company Cycling ’74.
the author found to have the most similar effects to those of the suggested units. Figure 3 is a screenshot of this plugin with the settings recommended by the author.

![Waves UltraPitch Plugin](image)

Figure 3- Waves UltraPitch Plugin

It is possible to use a plugin for a live performance and trigger the effects with pedaled MIDI controller. However, this would require extensive programming knowledge as well as cost-prohibitive software.
CHAPTER 3

NOANOA

CONTEXT, FORM, AND MUSICAL LANGUAGE

_NoaNoa_ was written in 1992, ten years after _Laconisme de l’aile_. By this time Saariaho had developed her characteristic approach to writing for the instrument, incorporating extended techniques, text, and electronic effects. This piece includes the use of the voice, _glissandi_, quarter tones, controlled _vibrato_, multiphonics, and breath sounds, in combination with triggered electronic effects. These electronics are comprised of both pre-recorded sounds and effects that are applied to the live flute sound. The techniques indicated in the score are defined in a Notation page, and as in _Laconisme de l’aile_, the notation is borrowed from Pierre Yves Artaud’s _Present Day Flutes_. The layering of the live flute with extended techniques and the electronic effects creates a polyphonic work.²⁵ The piece consists of the interplay between two tempi: Tempo I defined as _intenso_ and Tempo II defined as _calmo_. But unlike in _Laconisme de l’aile_, which retained a unique character with each tempo, the mood of the tempi varies with each iteration. _NoaNoa_ shares the same gestures as _Laconisme de l’aile_, such as trills, leaps, ascending scales, and _glissandi_.²⁶

The seeds for _NoaNoa_ were planted in 1991 while Saariaho was writing the ballet music _Maa_. The title, _NoaNoa_, was inspired by a woodcut of the same name by French Post-Impressionist artist Paul Gauguin. The voiced part of the work consists of fragments

²⁵ Hoitenga, _The Flute Music of Kaija Saariaho: Some Notes on the Musical Language_.

²⁶ Ibid.
of phrases extracted from a travel diary written by Gauguin during a trip to Tahiti from 1891-1893. Saariaho shapes these excerpts as well as phonemes from the words into a poem that is presented as part of the introduction and description of the work.

\[\text{NoaNoa}\]
\[l'arbre sen-tait la rose très o-do-rant sen-tait rose rose sen-tait rose s t r s t s t t t t t t t sen-tait la rose\]
\[mes-s yeux voi-lés par mon coeur-rr sen-tait la rose la fleur-r la...fleur\]
\[t t t t t t t t t t t t t très...odorant me-lange me-lange me-lange...d'odeur l’ar-bre sen-tait la rose fleur-r tr tr tr\]
\[fleur fanée fleur fleur l f l f r me-lange d'odeur par-fums parfums de san-tal très...odorant s f r f s z t f\]
\[l'arbre sentait fleur...dorée Je...reviendrai mes yeux yeux la fleur-r fleur fleur fleur fanée\]
\[t r t r t t t t t t t\]
\[je fl sa t r t t t t s t k s t k s t k s t k tr ro je jet je t ta ka ta ka ro tr re fl sa ka t r s z t k z t k fl tr z t k ro fl tr ka z t fl tr ro z t k fl tr z t k s t s la...fleur f r s t s s t s la...fleur\]

Figure 4. Fragments from Paul Gauguin’s travel diary used in NoaNoa

The following translation, while not word-for-word, retains the syntax of the original with the exception of where this would change the meaning. The phonemes, although in French, remain in order to retain the form of the poem. Some punctuation has been added for the purpose of clarity.
The tree smelled like a very fragrant rose, smelled like rose, smelled like rose
Smelled like a rose

My eyes veiled by my heart
Smelled like a rose, the flower
the…flower

very …fragrant blend blend…of fragrance the tree smelled like a rose flower

wilted flower flower flower flow flow
blend of fragrance scent scent of sandalwood very…fragrant flow flow

the tree smelled of
golden…flower I…will return
my eyes eyes the wilted flower

The…flower
the…flower

Figure 5. Translation of Text Fragments

ELECTRONICS- INSTALLATION AND OPERATION INSTRUCTIONS

Unlike *Laconisme de l’aile*, the electronic portion of *NoaNoa* is indispensable and integral to its preparation and performance. The electronic specifications of the work will therefore be discussed prior to discussing other musical and technical aspects. One of the performance challenges of *NoaNoa* is keeping abreast of computer and recording technology. Originally written by Jean-Baptiste Barrière in a software program called Max, the first version of the accompanying electronics called for a ProTools digital audio workstation system. Two external reverb units were needed to create the various reverb
effects, as well as pitch shifting harmonizers and a MIDI interface to trigger the events.\textsuperscript{27} There were several drawbacks to this system in that the effects units became obsolete and hard to find, the software itself was not dependable, and Max required extensive programming knowledge. Additionally, all of the software and hardware were cost-prohibitive. All of these factors contributed to the inaccessibility of the work.

An updated version was created in 2000 by Miller Puckette to make \textit{NoaNoa} more accessible, this time with a free program called Pure Data, or Pd. Because Pd was platform-independent, meaning it could run on operating systems such as Linux, Macintosh, or Windows, and open source, meaning free access, it ensured future compatibility and was hoped to provide longevity of the work.\textsuperscript{28} The programming design for Pd is similar to Max and still requires some programming knowledge to properly function, particularly where it concerns MIDI. This software patch was written as part of the Pd Repository Project\textsuperscript{29} and was available on the project website until it was replaced by the third version of the patch. Incidentally, there are currently at least ten pieces written in Pd that are part of this project.

The Pd patch for \textit{NoaNoa} abolished the need for the external reverb units and the ProTools workstation as a playback mechanism for the sound files. Both the reverb sounds and playback of the sound files are handled within Pd itself. While performance instructions for the composition are quite clear, operation of the patch is not as easy to determine. The screens can be quite confusing and difficult to configure on one’s own,


\textsuperscript{28} Ibid.

\textsuperscript{29} Ibid.
unless one learns how to program in Pd, consults with someone who has previously used it, or spends an inordinate amount of time experimenting. There is no readily available manual or guide for configuring the patch for performance, although there is extensive documentation of general programming in Pd. Although this patch is not as easy to locate as its replacement, it is still relevant and will run on any version of the Mac OS X operating system.

The third and most current software patch, NoaNoa Patch Version 2.8, is available on the publisher’s website. This software was created once again using a version of Max, Max/MSP. While the patch has only a few adjustable parameters or programming options, it does not require the purchase of any additional software such as Max/MSP, plugins, or hardware such as external effects units. All playback of sounds and effects is handled within the patch, as are the configuration of the interface and MIDI controllers. Improvements were made in the stability of the program because earlier versions were prone to crash. The graphic user interface is also more intuitive than previous versions. Additionally, this version offers the choice of performance in stereo with two speakers, or in quadrophonic surround sound with four speakers.

The newest software is easier to work with in many ways, though it still has a few problems. In the initial setup of NoaNoa Patch Version 2.8, the author was unable to complete installation because two files were inadvertently omitted. After contacting Jean-Baptiste Barrière directly, the two missing files were sent and replaced. The publisher was notified and steps are being taken to rectify the problem. The reference recording

30 The Chester Novello website is www.chesternovello.com. The patch can be downloaded from www.chesternovello.com/documents/additional/noanoa.htm

31 The publisher’s website still shows a requirement for these external effects processors.
was created using NoaNoa Patch Version 2.8 and the instructions provided below are for this version. Diagrams of the setup for both live performance and recording can be found in Appendix III and Appendix IV, respectively.

Installation and Operation of the NoaNoa Patch Version 2.8

The following instructions pertain to the installation and operation of the third and most recent version, NoaNoa Patch Version 2.8, as it pertains to the Macintosh (Mac) operating system, version 10.2 or newer. The author tested this version on Mac OS X operating system versions 10.4 to 10.6.8. Complete technical specifications are provided in Appendix V. Version 2.8 is a “standalone” patch, meaning that it will run independently of any other software program.

Prerequisites for installation:

1. Install all drivers and updates necessary to power the audio interface (hardware) in the “standalone” mode. These will be found online, generally on company websites. Most brands of audio interfaces do not require separate drivers for running third-party software such as Max. However, some companies do offer separate drivers. Avid, the brand of audio interface used for the reference recording, is one such company.

2. Install any drivers necessary to power the MIDI controller. These will also be found on company websites.

3. All connections to the audio interface, MIDI controller, and microphone should be completed as shown in Appendix III.
Installation

1. Download the NoaNoa patch to the desktop and unzip it into its own folder. The name of the folder itself is unimportant, however it is recommended to keep the default name in order to follow these instructions. The folder should contain 33 sound files as well as the following files:
   a. NoaNoa-v2.8.app
   b. concertA_1
   c. A2g.txt
   d. g2A.txt
   e. harm.aiff
   f. nowrap-ramp.aiff

2. Copy the thirty-three sound files from the publisher’s CD (included when purchasing the score) into the same folder as the previous six files. These files are in “.AIFF” format and have a sample rate of 44,100Hz and a bit depth of 16.

3. To open the patch, click on the file labeled, “NoaNoa-v2.8.” After several seconds, a series of screens will open (Figure 6). If the program crashes before it loads, you must exit Max and delete the preferences folder created by the program. There have been documented problems with this patch running after initial installation. A text file written

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32 The files “harm.aiff” and “nowrap-ramp.aiff” are not included on the publisher’s CD or available on the website at this time but are necessary for version 2.8.
by Jean-Baptiste Barrière accompanying the patch includes the following instructions as a solution and directs that it must be followed in this order:

a. Quit the NoaNoa Patch and any other open Max applications.

b. Navigate to the “../Users/Library/Preferences” folder.

c. Delete the folder named, “Max 5 Preferences.”

d. Empty the trash can.

e. Restart the NoaNoa patch.

Figure 6. Screenshot of NoaNoa Patch Version 2.8

Note: Steps 4 through 11 MUST be followed in order or else the flute microphone’s audio signal will not pass through the output channels and all that will be heard are the effects.
4. In the window titled “DSP Status,” select the correct audio driver. In the following example, it is labeled “CoreAudio Digidesign HW ‘002’” (Figure 2). If your particular interface does not show up in the list, select the tab “Audio Driver Setup.” If this does not automatically open the computer’s Audio/Midi Setup window, then:
   a. Click on the finder tab in the dock.
   b. Select “Go” from the menu item on the status bar at the screen top.
   c. Select “Utilities, Audio MIDI Setup.”
   d. Select the proper interface and “command click” to “Use this device for sound input/output.”
   e. Ensure that the sample rate is set to 44100.

5. In the “DSP-Status” window, select the corresponding interface in the “INPUT DEVICE” pull-down menu. In this example it is the “Digidesign HW (002)” (Figure 7).
6. In the “DSP-Status” window, select a sampling rate of “44,100 Hz” (Figure 7).

7. In the “DPS-Status” window, turn the audio “ON” from the pull down menu at the very top. Be patient as this may take a few seconds to take effect (Figure 7).

8. Select “File, MIDI Setup” from the pull-down menu at the top of the screen and verify that the proper MIDI device is selected. It is acceptable for all of the devices to be checked, however if you run into a problem during this step, uncheck all but the actual device you are using (Figure 8). Close this window when finished.
Figure 8. Screenshot of MIDI Setup Window

The patch will advance one event at a time via a MIDI controller when the controller output is set to Program Control. The MIDI setup used for this patch is illustrated below (Figure 9).

Figure 9. Sample MIDI Settings

9. In the “NoaNoa-v2.8” window, select the correct item in “synth/pedal source.” It is necessary to actually select each pull down item in the box titled “NoaNoa-2.8,” even if
the correct item is already displayed. If this is not done, the flute microphone signal will not pass properly to the output channels. While this might not technically be considered a program “bug,” it is an important idiosyncrasy that can affect the performance of this piece.

Figure 10. Screenshot of NoaNoa-v2.8 Window

10. Push the button labeled “Init !!” (item #2 in the NoaNoa-v2.8 window). All the faders in the various windows will jump into position (Figure 10).

11. In the “NoaNoa–v2.8” box, select “STEREO” (item #3 in the NoaNoa-v2.8 window). While most users will output to stereo (2 outputs), the patch does allow for quadraphonic surround sound (8 outputs), provided the audio interface has 8 outputs and
the performer has 4 speakers. The diagram for a performance with 4 speakers is shown in Figure 11. The wider the audience seating area, the less effective this setup will be.

![Figure 11: Diagram for Performance with 4 Speakers](image)

12. The input level from the flute microphone should be set by adjusting the audio interface and observing the digital input meter in the pane labeled “Inputs” (Figure 12). (As shown in Appendix III, the flute microphone must be connected to the “channel 1 input” of the audio interface or the signal will not pass through to the patch.)

![Figure 12. Screenshot of Inputs](image)
The level should never be allowed to hit the red (upper portion) of the input meter or distortion may occur. Set the flute microphone level (at the audio interface) to barely touch the yellow area of the meter at its loudest point. Past this, level is a matter of artistic taste and the composer’s instructions for proper balance between the input and the pre-recorded soundtracks.

Although it is initially possible to adjust the level of the flute microphone by changing the value in the grey box of the “Inputs” pane, it is not advisable. Proper audio operation requires that the flute microphone level (gain) be adjusted either at the interface or at the microphone preamplifier if using one. Setting the level too low at the interface and subsequently increasing it via the patch will invariably lead to increased noise levels (i.e. audio hiss). This problem will be exacerbated once the signal is sent through a speaker system. Once the level is set at the interface, very small incremental changes may be made using the “Inputs” window. If you are using a microphone preamplifier, set the gain level here first, then make small adjustments at the interface. A professional microphone preamplifier will have enough graduations to make adjusting the input level at the patch unnecessary.

13. The patch is now ready for playback. The MIDI pedal or the pedal simulation button can be used to cycle from one event to another as indicated in the score. Provisions for selecting specific events or advancing one event at a time are also located in this pane (Figure 13).
The premix window pictured in Figure 14 allows balance to be adjusted for the amount of flute sent to the various internal reverbors and the internal harmonizer. The “spat,” or spatial, channels are those containing the internal reverbors, which are intended to simulate the natural reverberation of a room. The levels are those that have been chosen by the composer, but adjustments may be made here if necessary. In performance, this author has found it necessary to lower the “Soundfiles” output levels by approximately 30 percent, as they tend to overbalance other parts of the audio mix.
The window labeled “dacs” is where output signals and output levels are indicated. Set the output pull-down menu (either quad or stereo) to match what was selected in step 11. In the event of audio feedback, the button labeled “ESC for dacs on/off” is an expedient method of muting the outputs (Figure 15). (The most common cause of audio feedback is setting the microphone too close to the speakers.) In the unlikely event that the output level to the mixer is too high, output levels can be reduced in this window. However, this should only be attempted after first setting levels at the mixer.
PERFORMANCE GUIDE

Note: The following performance guide is intended to accompany a score of the work.

Measures 1-2, Tempo I: The effect of the infinite reverberation\(^{33}\) at the beginning is almost that of two flutists playing. The reverberation carries the E3 through the rest in the first measure so that it is virtually imperceptible to hear when the performer actually stops playing. The figure in the second measure is then layered on top of the sounding pitch, creating the illusion of a second player. The glissando to the F3 in this measure grows out of this sustained E3, which is now strengthened by the layering of the actual sound and the reverberation. The result is that both the F3 and the E3 sound

\(^{33}\) Infinite reverb is not a naturally-occurring type of reverberation, but an artificial one comprised of endlessly continuing echoes, without the dying-away that would occur in a room.
simultaneously. This *glissando* can be accomplished either by using the embouchure or by a fingered pitch bend using L3 on the A key. The latter is preferable in order to attain a true F3 and create a minor 2\textsuperscript{nd} interval. The middle finger of the left hand, L3, should slide off of the A key until just the rim is depressed, and then released at the very end of the measure. It is unnecessary to sustain the F3 as it will continue to sound through the infinite reverb.

Measures 3-8, Tempo II: The *glissandi* in these measures are also best done fingered in order to produce a clear half-step change. The index finger of the right hand, R2, should first depress the rim of the F key without covering the hole and then slide until the hole is fully covered, creating a forked fingering where both R2 and R4 are depressed. In measures 6-8 it is acceptable for intermediate partials to sound as long as the written partials sound clearly and the progression to the high point of the phrase in measure 8 is achieved.

Measures 9-20, Tempo I: The timbral trill in measure 10 can be fingered by trilling R4, or the D key. The transitions in and out of the “double trill” in measure 20 require some coordination to execute. The composer defines this effect as “trilling by quickly alternating the first and second finger of the right hand on the key that is normally trilled.” Using the Bb thumb key for the half-step trill A2 to Bb2 at the beginning of the measure creates a smooth transition between the trills. A suggested approach is as follows: while trilling from A2 to Bb2, move the right hand from its normal place and position it over the left hand. Make as rapid of a transition as possible from trilling L3 to alternating R2 and R3 on the A key. Switching back to the half-step trill very briefly,
with an equally smooth transition, ensures that the A2 is the final sounding pitch prior to taking a breath at the end of the measure. Otherwise, the rapid alternation of the fingers on the right hand make it very difficult to control which of the trilled pitches is the last one fingered.

Measures 21-27, Tempo I: Although still in the same tempo as the previous section, both the mood and the colors change at this point of the work. The breathy tone, or air-only tone, predominates and the spoken text is introduced. The glissando into measure 22 should be produced either with the embouchure, by tilting the head, by rolling the flute towards you, or by a combination of these methods. The C1 should be fingered on the downbeat, with care to resume a normal posture and embouchure so as not to produce a flat pitch. It is acceptable to slightly voice the whispered text so that the words are distinguishable over the trill beginning in measure 24. Breaths should be placed where they will least disrupt the text, such as following measure 24 and measure 26, and if necessary, after measure 27.

Measures 28-30, Tempo I: The phonemes in the first measure of this section can be voiced instead of whispered to give more emphasis to the crescendo. In measure 30, achieving the indicated glissando is not possible if playing the G3 with the standard fingering. Instead, finger G1 and overblow to produce the written pitch, allowing for an accurate glissando by first depressing L5 and subsequently sliding and lifting L4 off the tone-hole.
Measures 31-33, Tempo I: The fingering <125C> is L1234/R3B45. (The B refers to depressing the second trill key.) Aiming for the Bb3 with a fast airspeed will ensure that the highest note speaks, while loosening the embouchure slightly will allow the lower pitches of the multiphonic to speak as well. Adjusting the angle of the airstream downwards can also aid in producing the lower pitches.

Measures 34-37, Tempo I-Tempo II: In measure 35, the C#1 can be in between a normal tone and a breathy tone to allow the whispered text to be heard. The glissando in this measure can be executed with the embouchure or by tilting the head and chin downward, while changing to the standard fingering for C2. Resuming a standard head position and embouchure on the downbeat of measure 36 prepares for the transition into Tempo II. To achieve the change of the multiphonic in measure 37, one can reduce the airspeed and slightly loosen embouchure.

Measures 38-45, Tempo II-Tempo I-Tempo II: The glissando in measure 39 first requires depressing the rim of the F key with R2, then sliding this finger to cover the hole, and finally releasing R4. The double trill in measure 42 is almost identical to the previous one in measure 20. The most effective approach is to engage the Bb thumb key, play the initial half-step trill using only the left hand and overblow (L123 and trill L3), so that the fingers of the right hand are free. This also prevents the pitch change that occurs when utilizing the standard trill fingering and then lifting the fingers of the right hand. As smoothly as possible, replace L3 with an alternation of R2 and R3 on the A key. Before

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34 Artaud.
proceeding into the next measure, transition back to trilling with L3 while moving the right hand back to its usual position.

Measures 46-55, Tempo II: The three *glissandi* in measures 46-47 can all be accomplished by using the embouchure or tilting the head downwards and then resuming a normal position on the arrival note. The notation is somewhat confusing in these two measures because an empty circle is used both above the staff to denote the type of tone (standard or breathy) and below the staff to indicate a *niente* dynamic. The electronic effect at the beginning of this section is notated as lasting only two measures; however, the author found it actually extends much further and may continue all the way to measure 55. In these measures, the text can be difficult to project over the electronic effect. Instead of whispering, one may choose to either slightly voice the text or to have the audio engineer temporarily boost the level of the flute microphone. A good place to breathe is between measure 49 and measure 50 because it distinguishes the repetition of the letter “r.” The *glissando* from measure 52 to measure 53 is another instance of a non-fingered pitch bend achieved by either the embouchure or by tilting the head downward and resuming a normal playing position on the arrival note. The arrival note of the *glissando* in measure 54 is notated as an A3. This is the only instance that an E3 transitions to an A3 instead of to an F3 and may be a misprint. It is possible to play a *glissando* to F3 and then play an A3 as a grace note leading into measure 55.

Measures 56-68, Tempo I: In measures 57-58, the harmonics are notated for the fundamental F1. The trill can be accomplished by fluctuating the first finger of the right hand (R2) throughout all of the partials. The downbeat of measure 58 should be an F3
instead of an E3. In measures 61-63, where the voice is marked “as high as possible,” it can be very effective to make the arrival note of each *glissando* successively higher so that the final arrival in measure 63 is the highest possible pitch. The fingering <127A>, first introduced in measure 65, is L13/R235. This multiphonic may work on many instruments without the use of R5, which may be an easier fingering for some flutists. The lower note tends to speak more easily, requiring the performer to increase the airspeed for the higher note while maintaining a flexible and slightly open embouchure for the bottom note. The fingering <126B> in the subsequent measure is L1234/RA35 (the A refers to the first trill key). However, on many instruments the same pitches can be produced using <125C>. Additional fingering options may exist for all of the multiphonics utilized in this work, and individual instrument responses may differ. Experimenting with close substitutes for the suggested fingerings may lead to easier and/or more effective solutions.

Measures 69-93, Tempo II: The electronic effect that begins in measure 74 may carry through the end of measure 77 but not beyond the bar line. It therefore may be necessary to exaggerate the *misterioso* quality by slowing down the tempo between measures 74-77. The F1 in measure 76 needs the addition of R4 on the D key so that R2 can be slid off of the key to achieve the *glissando*. The B2 at the end of measure 83 can be fingered L234 so that L3 and L4 can be slid off the A and G keys to produce the *glissando* to C2. The reverberation may continue to sound into measure 93.

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35 Notated in the score as a filled-in triangle.

36 Artaud.

37 Ibid.
Measures 94-109, Tempo I: At the Tempo I beginning in measure 100, it is more important for the phonemes to speak than for the simultaneous pitches to be heard. In other words, it is acceptable for the phoneme to resonate in the instrument without a clear tone on the fingered pitch.

Measures 110-118, Tempo I: The glissando in measure 111 may be executed by first depressing R4 on the D key, then L5 on the G# key, and finally depressing the rim of the G key with L4 before sliding this finger to cover the hole. In measure 112, first add R3 on the E key while simultaneously lifting L4 from the G key, and then depressing L3 on the A key. In measure 113, slide the thumb (L1) slowly towards the right so that the B key disengages very slowly, thereby producing the glissando. In measure 117 it is best to delay the tremolo and the declamation of the text until the notated harmonic on the downbeat is produced. The text in measures 117-118 may be slightly voiced so that it carries above the electronic accompaniment.

Measures 119-141, Tempo II-Tempo I: The fingering <77G-A> is L134/R235. The fingering remains the same while the pitches change. Adding L2 in measure 121 assists in changing to E3 and C#3, but it should be released on measure 122. The electronic effect triggered in measure 119 may actually extend beyond measure 124, and all the way up to measure 128, where the next pre-recorded effect enters. From measures 128-130, the first syllable of the text in each measure should be whispered or spoken before triggering the effect with the MIDI pedal. The most effective method is to whisper fleu

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38 Ibid.
and begin the flutter as a gargle with the “r” while simultaneously stepping on the pedal. Measure 134 is totally silent. The fingering in measure 137 is very awkward because it requires sliding R5 between C1, D1, and Eb1. An earlier version of the piece used the notes C1, Db1 and D1 instead of the above-named pitches and the composer does not mind if these notes are substituted.39

Measures 142-159, Tempo I: Measure 142 is a transition into a *furioso* section beginning at rehearsal letter F. The phonemes in this measure may be voiced to assist in the *crescendo*, as can those in subsequent measures. The *sforzissimo* (*sffz*) underneath the phonemes imply heavily emphasized breath accents. The double-trill in measure 145 is extremely challenging to execute, if not impossible because the first trill key is too small to effectively alternate R2 and R3. Another option is to alternate the first two fingers of the right hand (R2 and R3) on both of the trill keys, producing a similar effect. The phonemes in measure 147 are challenging to say rapidly because the repetitive consonants feel like a tongue-twister. One practice technique is to organize them into groups such as: “tttt-tsts-tks-tks-tkk.” There are many options for the fingering the quarter tones in measures 148-154. Figure 16 lists suggested fingerings. These options offer the easiest fingering transitions in the context of the scales.

![Figure 16. Suggested Quarter Tone Fingerings](image)

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The *glissando* in measure 150 can be done with either the embouchure or tilting the head and chin upwards, and ending the trill by leaving the first trill key engaged, so that D3 is the last sounding pitch. The multiphonic in measures 156-158 should end with the pre-recorded material and is followed by one measure of complete silence.

Measures 160-175: Measures 163-166 can be approached similarly to measures 156-158. For the first time in this piece, the composer uses *fermati* in measure 168 and measure 170 to designate prolonged silence as the work comes to an end. For the multiphonics with the text of *la fleur*, such as in measure 169 and measures 172-175, even if the flute sound is interrupted or drops out momentarily, the text should always be declaimed. For each instance, the multiphonic should resume so that it extends beyond the text and the final multiphonic fades out with the pre-recorded material.

Additional Notes: Using multiple music stands and slowly sidestepping from stand to stand while playing is common practice when performing a piece that does not have the possibility of page turns. Performing a piece with a MIDI pedal controller, however, necessitates standing more or less in one location for the duration of the performance. In addition, if using a stationary microphone (as opposed to one that is attached to the instrument or worn on a headset), it is also preferable to remain in one place. If using printed music, an effective solution for performing *NoaNoa* is to affix two pages at a time to a piece of poster board or cardboard to make one very large page. Thicker poster board, available in black, can be purchased from office or art supply stores and placed between the music and the music stand to reinforce the stand and prop up the music so
that it does not bend or fold. Another issue is that the density of the score may at times make it difficult to read. Highlighting or using a colored pen or pencil to mark when the pedal should be depressed may simplify score-reading.
REFERENCES


APPENDIX I

LACONISME DE L’AILÉ LIVE SETUP
APPENDIX II

LACONISME DE L’AILLE LIVE SETUP EXPANDED VIEW
APPENDIX III

NOANOA LIVE SETUP
APPENDIX IV

NOANOA RECORDING SETUP
APPENDIX V

EQUIPMENT SPECIFICATIONS\textsuperscript{40}

\textsuperscript{40} These are the specifications listed on the publisher’s website and are provided here for reference.
Suggestions for minimum computer specifications:

- Apple Macintosh: G4 or greater with a minimum of 500Hz CPU processing, 256 MB RAM, Mac OS 9.2.2 or Mac 10.2.x
- PC: Pentium III processor with a minimum of 500Hz CPU processing, 256MB RAM, Windows XP or better

Suggestions for audio interfaces

- MOTU 828MKII
- MOTU 896 HD
- Digidesign DIGI 002
- RME Hammerfall

Suggestions for MIDI interface

- MOTU Fastlane
- MOTU Micro Lite
- Sustain Pedal (triggered by Max)

Suggestions for Reverb Units

- Lexicon PCM 81
- Lexicon PCM 91

Suggestions for Harmonizers

- Yamaha SPX 90
- Yamaha SPX 2000
- Eventide Ultra Harmonizer Series

Suggestions for Mixers

- Yamaha 02R
- Yamaha DM 2000

Suggestions for Speaker System Brands

- Meyer Sound
- Genelec
- Audio 33
- Nexo

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41 This author used a MacBook Pro Intel Dual Core 2.53GHz with 4GB RAM.
42 Windows versions of the NoaNoa patch are available directly from Jean-Baptiste Barrière.
43 This unit is no longer in production.
44 This unit is no longer in production. It has been replaced by the Yamaha 01V.
March 6, 2013

Katayoon Hodjati
718 Hollow Rd.
Ellicott City, MD

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