

# PNW

A musical composition for Narrator, Tenor Saxophone, and Live Computer Electronics

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A dissertation

submitted in partial fulfillment of the  
requirements for the degree of

Doctor of Musical Arts

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Reading Committee:

Richard S. Karpen, Chair

Joel-Francois Durand

Juan C. Pampin

Program Authorized to Offer Degree:

School of Music

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University of Washington

**Abstract**

# PNW

A musical composition for Narrator, Tenor Saxophone, and Live Computer Electronics

Douglas M. Niemela

Chair of the Supervisory Committee:  
Director Richard S. Karpen  
School of Music

Concatenative Sound Synthesis (CSS) has undergone software tool development for composition in non-realtime use in the MATLAB (Sturm, 2006) and Max/MSP (Schwarz, 2003) programming environments. Live Concatenative Sound Synthesis remains rare as of 2015 and has one initial tool within Max/MSP (Schwarz, 2006). This dissertation is centered around the original creation of an extensive Live CSS plug-in for the SuperCollider audio environment, its exploration and use in a significant musical composition. “PNW”, contained herein, is this work, a composition of live poetry reading, tenor saxophone accompaniment, and use of “Concatenate”, a new Live CSS plug-in for the SuperCollider environment.

## ACKNOWLEDGEMENTS

For his continued patience and words of wisdom, I would like to thank my advisor, Dr. Richard S. Karpen. I was permitted room to develop an idea from concept, to software tools, to resultant work. I would also like to thank both Dr. Juan Pampin, who guided my initial experiments in manipulating sound with computers, and Dr. Joel-Francois Durand for his encouragement and connection to the tradition of composition. As time moves on, and we are gone, this was an especially intense and dynamic period in the growth of the music and digital arts departments at the University of Washington.

Thank you to Raymond Carver for producing poetry like no other, and to Tess Gallagher for viewing my test video and warmly approving of this use.

I would also like to thank my father, (Professor) Roy W. Niemela, for his academic guidance through my undergraduate years, and my mother, Corinne S. Niemela, for her unquestioning support.

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Date: June 22, 2015  
To: Doug Niemela  
Email: [dougn@uw.edu](mailto:dougn@uw.edu)  
From: Lauren Rogoff  
Re: Performance of 11 poems for PhD Thesis Presentation  
On behalf of: Tess Gallagher

Dear Doug Niemela,

This letter grants one-time, non-exclusive, English-language musical performance rights to perform a live reading accompanied by music (the "Production") of 11 poems: *The Old Days*, *My Boat*, *Powder Monkey*, *The Phone Booth*, *Where the Groceries Went*, *The Cobweb*, *The Car*, *The Jungle*, *It's Course*, *Possible*, and *Eagles* (collectively, the "Work") by Raymond Carver (the "Author") on the terms indicated below only:

- Performers: Doug Niemela, reader TBD, musical interludes by a member of Bill Frisell band
- Territory: Washington, US
- Admission price: free
- Performance date/duration: Oct 22, 2015
- Performance location: "The Chapel Performance Space", Good Shepard Center, 4649 Sunnyside Ave N. Seattle, WA.
- Audience size: 100

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Yours sincerely,

Lauren Rogoff  
lrogoff@wylieagency.com

The following is the archival record for the “Production” of the  
“Performance of 11 poems for PhD thesis Presentation” of Raymond Carver.

See bibliography for credits per Wylie Agency.

Thanks to all, especially Tess Gallagher.

Douglas M Niemela

# **PNW**

**For Narrator, Tenor Saxophone, and Live Computer Electronics**

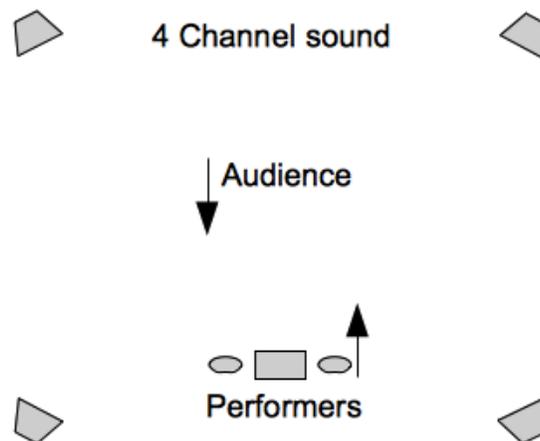
**(2015)**

## SCORE NOTES

Performing Time: Approx. 18'

“PNW” is centered around a live reading of 8 poems of Raymond Carver (Carver, 1985, 1986). Told as personal stories of Pacific Northwest life, raw audio material for the accompanying computer concatenation corpus was collected from Washington's Puget Sound region, home for Raymond Carver in later life. Score was created for surround sound live reproduction. The narrator, tenor saxophonist, and live mix engineer actively perform together throughout the 10 movements. The concatenation software serves to create an interactive environment for all performers.

### SET UP



Concatenative sound synthesis components have been developed for 4 channels of surround sound reproduction. Performers should be situated inside this quadraphonic field so as to hear and react to the entirety of the sound experienced by the audience. It is suggested the

performers be aligned facing the audience, from the front inside portion of the quadrasonic image. This includes the mix engineer position. Plain sound reinforcement for both sax and voice can be restricted to speakers on either side of this position, so as to give directionality to these sources. Slight reverb can be used to augment these sources if desired.

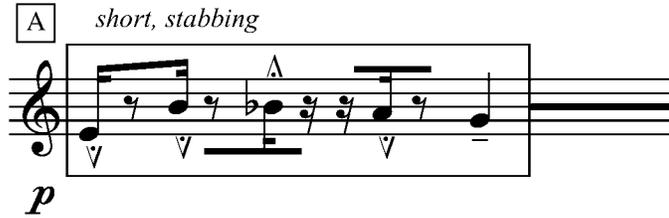
## NARRATOR

Narration should be read as a “first person” telling of life experiences. Narration should be performed into a suitable voice microphone with wind filter, providing input to both computer processes, and hall sound reinforcement.

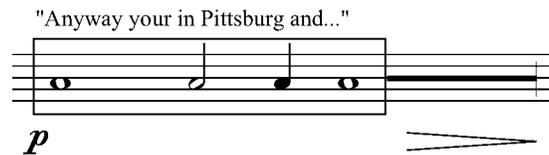
Score order designates movements 1 and 4 as solo tenor saxophone (prelude and interlude). The narrator should wait for sounds to dissipate before entering after these. Likewise, between movements, the narrator should wait for sounds to dissipate and the mix engineer to progress the concatenation program to the next synthesis construct.

## TENOR SAXOPHONE

Tenor Saxophone performs as both solo prelude and interlude, as well as accompaniment to live voice narration on 3 poems. The tenor saxophone part should take caution as to not overwhelm the voice narration when acting as accompanist. A clip-on type microphone is used on the sax bell, providing input to computer processes and hall sound reinforcement.



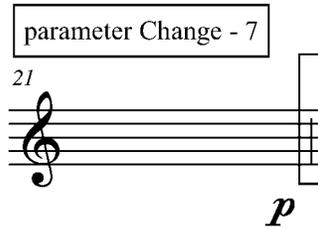
Score for tenor saxophone provides suggested “key phrases” for improvised elaboration. These phrases are coordinated with relatively predictable reaction from the concatenation software. Provided the performer is keenly aware of the nature of the narration at any moment, the performer may deviate from the suggested key phrase if another idea is in mind. This should always provide smooth and supportive counterpoint to the narration.



Key phrases are, at times, provided in coordination with word reference points to the poetic narration. These serve as timing coordination points between narrator and tenor saxophone.

## MIX ENGINEER

During performance of any movement, the mix engineer should actively balance the sound hall volume of source acoustics, and resultant concatenative sound environment. The environment should not overpower the presence of source acoustics.



At times within the score, a parameter change (See Appendix A for codes) is specified. This should be transmitted to the running concatenation synth without stoppage.

## ELECTRONICS

Concatenation processes involve the use of 13 audio files and associated “Conanalysis” metadata files to be loaded as the concatenation corpus. These may be obtained from the composer's world wide web audio repository. During progression among movements of the piece, select corpora will be combined and supplied to the designated synthesis construct for that movement. See the Concatenation help pages for details (Appendix A). Output will be 2 to 4 channels, depending on the movement. An appropriate GUI interface should be constructed to provide switching among these synthesis constructs. Within each movement, there are smaller parameter shifts indicated. These should be controllable from the same GUI performance interface.

The following are audio corpora, associated concatenation analysis files, and synthesis constructs for the SuperCollider audio environment (McCartney, 2002) required for each movement:



```

anaArray, freq, hasFreq);
    sig1 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.37), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig2 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.35), 1, parameterVal, 1,
anaArray, freq, hasFreq);
    sig3 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.22), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig4 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.30), 1, parameterVal, 1,
anaArray, freq, hasFreq);

    sig5 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.91), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig6 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.41), 1, parameterVal, 1,
anaArray, freq, hasFreq);

    sig7 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.36), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig8 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.38), 1, parameterVal, 1,
anaArray, freq, hasFreq);

    sig9 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.26), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig10 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (tempo * 0.48), 1, parameterVal, 1,
anaArray, freq, hasFreq);

    Out.ar(0, [sig + sig3 + sig4, sig5 + sig7 + sig9, ((sig1 + sig2 + sig4) * 0.45), ((sig6 + sig8 + sig10) *
0.45)] * csvol);
  }).send(s);
}

```

### III. The Old Days

```

bikingSea.aif      bikingSea.aif.analysis
delMarExt2B.aif   delMarExt2.aif.analysis
party.aif         party.aif.analysis
wesSyn102b.aif    wesSyn102b.aif.analysis

```

```

(
SynthDef(\concatenator3, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
    var env, sig, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3, sig8, sig9, sig10, sig11;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudioIn.ar(1);
    livesig2 = AudioIn.ar(1);
    livesig3 = AudioIn.ar(1);

    cssig = 0.6;
    livsig = 0.0;

    # freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

    hasFreq = hasFreq * 0.0027;

    t = Trig1.kr(Amplitude.kr(livesig3, add: -0.18), 2.5);
    inp1 = livesig * t;

    sig1 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.255, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig2 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (0.17 * 2), 1, parameterVal, 0,
anaArray, freq, hasFreq);

```

```

    sig3 = Concatenate.ar(corpusBuf, sig2, lowThresh, audFileCnt, (0.17 * 2), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig4 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.8975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig9 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.17, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig10 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.9975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig5 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.255, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig8 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.2975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig6 = DelayC.ar(sig1, 0.3, LFNoise1.kr(0.1, 0.03, 0.07));
    sig7 = DelayC.ar(sig4, 0.3, LFNoise1.kr(0.1, 0.03, 0.07));
    sig11 = DelayC.ar(sig10, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));

    Out.ar(0, [sig2 + sig1 + sig10, sig3 + sig4 + sig9, sig5 + sig6 + sig11, sig7 + sig8] * cssig);

}).send(s);
)

```

#### IV. Interlude (solo tenor saxophone)

hoSyn102bb.aif      hoSyn102bb.aif.analysis  
seattle441.aif      seattle.aif.analysis

```

(
SynthDef(\concatenator4, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
    var env, sig, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3, sig8, sig9, sig10, sig11;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudioIn.ar(1);
    livesig2 = AudioIn.ar(1);
    livesig3 = AudioIn.ar(1);

    cssig = 0.4;
    livsig = 0.0;

    # freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

    hasFreq = hasFreq * 0.0025;

    t = Trig1.kr(Amplitude.kr(livesig3, add: -0.14), 2.5);
    inp1 = livesig * t;

    sig1 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.255, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig2 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (0.17 * 2), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig3 = Concatenate.ar(corpusBuf, sig2, lowThresh, audFileCnt, (0.17 * 2), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig4 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.8975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig9 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.17, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig10 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.9975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

```

```

        sig5 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.255, 1, parameterVal, 0, anaArray,
freq, hasFreq);
        sig8 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.2975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

        sig6 = DelayC.ar(sig1, 0.3, LFNoise1.kr(0.1, 0.03, 0.07));
        sig7 = DelayC.ar(sig4, 0.3, LFNoise1.kr(0.1, 0.03, 0.07));
        sig11 = DelayC.ar(sig10, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));

        Out.ar(0, [sig2 + sig1 + sig10, sig3 + sig4 + sig9, sig5 + sig6 + sig11, sig7 + sig8] * cssig);
    }).send(s);
)

```

## V. Where the Groceries Went

seattle441.aif	seattle441.aif.analysis
ropesL.aif	ropesL.aif.analysis
knotsL441.aif	knotsL441.aif.analysis
ho441.aif	ho441.aif.analysis

```

(
SynthDef(\concatenator5, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
    var env, sig8, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudiIn.ar(1);
    livesig2 = AudiIn.ar(1);
    livesig3 = AudiIn.ar(1);

    cssig = 0.5;
    livsig = 0.0;

    # freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

    hasFreq = hasFreq * 0.002;

    t = Trig1.kr(Amplitude.kr(livesig3, add: -0.22), 2.5);
    inp1 = livesig * t;

    sig1 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.3967, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig2 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.2550, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig3 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.22, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig4 = Concatenate.ar(corpusBuf, sig3, lowThresh, audFileCnt, 0.22, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig5 = Concatenate.ar(corpusBuf, sig4, lowThresh, audFileCnt, 0.22, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig6 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.4533, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    Out.ar(0, [sig5 + sig4, sig5 + sig3, sig1 + sig2, sig6 + sig2] * cssig);

}).send(s);
)

```

## VI. The Phone Booth

seaSyn101c.aif      seaSyn101c.aif.analysis  
delMarExt2B.aif    delMarExt2.aif.analysis

```
(
SynthDef(\concatenator6, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
    var env, sig8, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudioIn.ar(1);
    livesig2 = AudioIn.ar(1);
    livesig3 = AudioIn.ar(1);

    cssig = 0.3;
    livsig = 0.0;

    # freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

    hasFreq = hasFreq * 0.002;

    sig2 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.55, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig3 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.95, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig4 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.75, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig5 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.88, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig1 = DelayC.ar(sig4, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig8 = DelayC.ar(sig5, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig6 = DelayC.ar(sig3, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig7 = DelayC.ar(sig2, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));

    Out.ar(0, [sig4+sig8, sig5+sig6, sig3+sig7, sig2+sig1] * cssig);

}).send(s);
)
```

## VII. My Boat

party.aif              party.aif.analysis  
hoSyn102bb.aif      hoSyn102bb.aif.analysis  
bikingSea.aif        bikingSea.aif.analysis

```
(
SynthDef(\concatenator7, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
    var env, sig, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3, sig8;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudioIn.ar(1);
    livesig2 = AudioIn.ar(1);
    livesig3 = AudioIn.ar(1);
```

```

cssig = 0.6;
livsig = 0.0;

# freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

hasFreq = hasFreq * 0.002;

t = Trig1.kr(Amplitude.kr(livesig3, add: -0.18), 2.5);
inp1 = livesig * t;

sig1 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.255, 1, parameterVal, 0, anaArray,
freq, hasFreq);
sig2 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (0.17 * 2), 1, parameterVal, 0,
anaArray, freq, hasFreq);
sig3 = Concatenate.ar(corpusBuf, sig2, lowThresh, audFileCnt, 0.17, 1, parameterVal, 0, anaArray,
freq, hasFreq);
sig4 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.2975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

sig5 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.255, 1, parameterVal, 0, anaArray,
freq, hasFreq);
sig8 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.2975, 1, parameterVal, 0, anaArray,
freq, hasFreq);

sig6 = DelayC.ar(sig1, 0.3, LFNoise1.kr(0.1, 0.03, 0.07));
sig7 = DelayC.ar(sig4, 0.3, LFNoise1.kr(0.1, 0.03, 0.07));

Out.ar(0, [sig2 + sig1, sig3 + sig4, sig5 + sig6, sig7 + sig8] * cssig);

}).send(s);
)

```

## VIII. The Car

bikingSea.aif	bikingSea.aif.analysis
seaSyn101c.aif	seaSyn101c.aif.analysis
seattle441.aif	seattle441.aif.analysis

```

(
SynthDef(\concatenator8, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
var env, sig8, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
var t, inp1, livesig3;

env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

livesig = AudioIn.ar(1);
livesig2 = AudioIn.ar(1);
livesig3 = AudioIn.ar(1);

cssig = 0.5;
livsig = 0.0;

# freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

hasFreq = hasFreq * 0.002;

t = Trig1.kr(Amplitude.kr(livesig3, add: -0.18), 2.5);
inp1 = livesig * t;

sig1 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.31167, 1, parameterVal, 0, anaArray,
freq, hasFreq);
sig2 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.2833, 1, parameterVal, 0, anaArray,
freq, hasFreq);

```

```

        sig3 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.2, 1, parameterVal, 0, anaArray,
freq, hasFreq);
        sig4 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.2, 1, parameterVal, 1, anaArray,
freq, hasFreq);
        sig5 = Concatenate.ar(corpusBuf, sig4, lowThresh, audFileCnt, 0.2, 1, parameterVal, 0, anaArray, freq,
hasFreq);
        sig6 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.2, 1, parameterVal, 0, anaArray,
freq, hasFreq);
        sig7 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.34383, 1, parameterVal, 0, anaArray,
freq, hasFreq);
        sig8 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.53407, 1, parameterVal, 0, anaArray,
freq, hasFreq);

        Out.ar(0, [sig4 + sig3, sig5 + sig6, sig7 + sig2, sig8 + sig1] * cssig);

    }).send(s);
)

```

## IX. The Cobweb

```

ho441.aif          ho441.aif.analysis
hoRocks.aif       hoRocks.aif.analysis
seattle441.aif    seattle441.aif.analysis

```

```

(
SynthDef(\concatenator9, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioin=1, anaArray;
    var env, sig8, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3, time;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudiIn.ar(1);
    livesig2 = AudiIn.ar(1);
    livesig3 = AudiIn.ar(1);

    cssig = 0.43;
    livsig = 0.0;

    time = 1.5;

    # freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

    hasFreq = hasFreq * 0.002;

    t = Trig1.kr(Amplitude.kr(livesig3, add: -0.20), 2.5);
    inp1 = livesig * t;

    sig3 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (time * 0.28), 1, parameterVal, 0,
anaArray, freq, hasFreq);

    sig4 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (time * 1.275), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig5 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, (time * 1.00), 1, parameterVal, 0,
anaArray, freq, hasFreq);

    sig6 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, (time * 0.88), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig7 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, (time * 1.1), 1, parameterVal, 0,
anaArray, freq, hasFreq);
    sig1 = DelayC.ar(sig3, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig2 = DelayC.ar(sig5, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));

```

```

        Out.ar(0, [sig4 + sig6 + sig3, sig5 + sig1 + sig7] * cssig);
    }).send(s);
)

```

## X. Its Course

```

hoSyn102bb.aif      hoSyn102bb.aif.analysis
crossC.aif          crossC.aif.analysis
bikingSea.aif      bikingSea.aif.analysis

```

```

(
SynthDef(\concatenator10, {arg corpusBuf, liveinput=0, lowThresh, audFileCnt, pitchwt, crossFade, parameterVal,
hold, gate, audioIn=1, anaArray;
    var env, sig8, sig1, sig2, sig3, sig4, sig5, sig6, sig7, livesig, livesig2, anaArray2, mainsig, cssig, freq,
hasFreq, livsig;
    var t, inp1, livesig3, sig9, sig10, sig11, sig12;

    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);

    livesig = AudiIn.ar(1);
    livesig2 = AudiIn.ar(1);
    livesig3 = AudiIn.ar(1);

    cssig = 0.45;
    livsig = 0.0;

    # freq, hasFreq = Pitch.kr(livesig2, ampThreshold: 0.002, median: 1, peakThreshold: 0.4);

    hasFreq = hasFreq * 0.002;

    t = Trig1.kr(Amplitude.kr(livesig3, add: -0.18), 2.5);
    inp1 = livesig * t;

    sig1 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.8525, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig2 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.55, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig3 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.3875, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig4 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.17, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig5 = Concatenate.ar(corpusBuf, sig4, lowThresh, audFileCnt, 0.53407, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig6 = Concatenate.ar(corpusBuf, livesig, lowThresh, audFileCnt, 0.465, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig7 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.5425, 1, parameterVal, 0, anaArray,
freq, hasFreq);
    sig8 = Concatenate.ar(corpusBuf, inp1, lowThresh, audFileCnt, 0.775, 1, parameterVal, 0, anaArray,
freq, hasFreq);

    sig9 = DelayC.ar(sig2, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig10 = DelayC.ar(sig1, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig11 = DelayC.ar(sig5, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));
    sig12 = DelayC.ar(sig7, 0.3, LFNoise1.kr(0.1, 0.1, 0.11));

    Out.ar(0, [sig1 + sig3 + sig9, sig2 + sig4 + sig12, sig5 + sig6 + sig10, sig7 + sig8 + sig11] * cssig);

}).send(s);
)

```

# Prelude

Tenor Sax.

(I)

niemela

**A**

*ppp*

**B**

7 *fast, arpeggiate*

*f*

9 *ff*

**C**

12 *long, still* *alternate fingerings*

*pp* *p*

16 *repeat C at given pitch*

*pp*

20 *pp* *pp*

25 *parameter change - 1* *Return to A*

*f* *niente*

## II. The Possible

I spent years, on and off, in academe.  
Taught at places I couldn't get near  
as a student. But never wrote a line  
about that time. Never. Nothing stayed  
with me in those days. I was a stranger,  
and an imposter, even to myself. Except  
at that one school. That distinguished  
institution in the midwest. Where  
my only friend, and my colleague,  
the Chaucerian, was arrested for beating his wife.  
And threatening her life over the phone,  
a misdemeanor. He wanted to put her eyes out.  
Set her on fire for cheating.  
The guy she was seeing, he was going to hammer him  
into the ground like a fence post.

He lost his mind for a time, while she moved away  
to a new life. Thereafter, he taught  
his classes weeping drunk. More than once  
wore his lunch on his shirt front.  
I was no help. I was fading fast myself.  
But seeing the way he was living, so to speak,  
I understood I hadn't strayed so far from home  
after all. My scholar-friend. My old pal.  
At long last I'm out of all that.  
And you, I pray your hands are steady,  
and that you're happy tonight. I hope some woman  
has just put her hand under your clean collar  
a minute ago, and told you she loves you.  
Believe her, if you can, for it's possible she means it.

Is someone who will be true, and kind to you.

All your remaining days.

# The Old Days (III)

Tenor Sax.

niemela

Solo Opening  
*tranquillo*

4

7 "Phone Ring" *mf* *fade out* *sfz* "someone pulled a knife"

12 "But you talked him down" *mp*

16 "Anyway your in Pittsburg and..." *p*

20 "It was then I remembered" *ppp* "Rang" *sfz* Voice CS Feed OFF

23 "I love you Bro" *pp*

25 "Hung up" *niente*

## III. The Old Days

[tenor saxophone starts - wait for cue  
from tenor sax performer]

You'd dozed in front of the TV  
but you hadn't been to bed yet  
when you called. I was asleep,  
or nearly, when the phone rang.  
You wanted to tell me you'd thrown  
a party. And I was missed.

It was like the old days, you  
said, and laughed.

Dinner was a disaster.

Everybody dead drunk by the time  
food hit the table. People  
were having a good time, a great  
time, a hell of a time, until  
somebody took somebody  
else's fiancée upstairs. Then  
somebody pulled a knife.

But you got in front of the guy  
as he was going upstairs  
and talked him down.

Disaster narrowly averted,  
you said, and laughed again.

You didn't remember much else  
of what happened after that.

People got into their coats  
and began to leave. You  
must have dropped off for a few

minutes in front of the TV  
because it was screaming at you  
to get it a drink when you woke up.  
Anyway, you're in Pittsburgh,  
and I'm in here in this  
little town on the other side  
of the country. Most everyone  
has cleared out of our lives now.  
You wanted to call me up and say hello.  
To say you were thinking  
about me, and of the old days.  
To say you were missing me.

It was then I remembered  
back to those days and how  
telephones used to jump when they rang.  
And the people who would come  
in those early-morning hours  
to pound on the door in alarm.  
Never mind the alarm felt inside.  
I remember that, and gravy dinners.  
Knives lying around, waiting  
for trouble. Going to bed  
and hoping I wouldn't wake up.

I love you, Bro, you said.  
And then a sob passed  
between us. I took hold  
of the receiver as if  
it were my buddy's arm.

And I wished for us both

I could put my arms  
around you, old friend.

I love you too, Bro.

I said that, and then we both hung up.

# Interlude

(IV)

Tenor Sax.

niemela

**A** *energetico*

*mf*

**B**

*p*

10

*p*

14

*p*

repeat A once

18 *various approaches*

*mf*

*slow, wander*

*p*

parameter Change - 7

21 *slow, wander*

*p*

24 *wander - G whole tone*

*mf*

*niente*

## V. Where the Groceries Went

When his mother called for the second time  
that day, she said:

“I don't have any strength left. I want  
to lay down all the time.”

“Did you take your iron?” he wanted to know.  
He sincerely wanted to know. Praying daily,  
hopelessly, that iron might make a difference.  
“Yes, but it just makes me hungry. And I don't  
have anything to eat.”

He pointed out to her they'd shopped  
for hours that morning. Brought home  
eighty dollars' worth of food to stack  
in her cupboards and the fridge.

“There's nothing to eat in this goddamn house  
but baloney and cheese, “ she said.

Her voice shook with anger. “Nothing!”

“And how's your cat? How's Kitty doing?”

His own voice shook. He needed  
to get off this subject of food; it never  
brought them anything but grief.

“Kitty, “ his mother said. “Here, Kitty.  
Kitty, Kitty. She won't answer me, honey.  
I don't know this for sure, but I think  
she jumped into the washing machine  
when I was about to do a load. And before I forget,  
that machine's making  
a banging noise. I think there's something

the matter with it. Kitty! She won't  
answer me. Honey, I'm afraid.  
I'm afraid of everything. Help me, please.  
Then you can go back to whatever it was  
you were doing. Whatever  
it was that was so important  
I had to take the trouble  
to bring you into this world.”

## VI. The Phone Booth

She slumps in the booth, weeping  
into the phone. Asking a question  
or two, and weeping some more.  
Her companion, an old fellow in jeans  
and denim shirt, stands waiting  
his turn to talk, and weep.  
She hands him the phone.  
For a minute they are together  
in the tiny booth, his tears  
dropping alongside hers. Then  
she goes to lean against the fender  
of their sedan. And listens  
to him talk about arrangements.

I watch all this from my car.  
I don't have a phone at home, either.  
I sit behind the wheel,  
smoking, waiting to make  
my own arrangements. Pretty soon  
he hangs up. Comes out and wipes his face.  
They get in the car and sit  
with the windows rolled up.  
The glass grows steamy as she  
leans into him, as he puts  
his arm around her shoulders.  
The workings of comfort in that cramped, public place.

I take my small change over  
to the booth, and step inside.  
But leaving the door open, it's

so close in there. The phone still warm to the touch.

I hate to use a phone  
that's just brought news of death.

But I have to, it being the only phone  
for miles, and one that might  
listen without taking sides.

I put in the coins and wait.

Those people in the car wait too.

He starts the engine then kills it.

Where to? None of us able  
to figure it. Not knowing  
where the next blow might fall,  
or why. The ringing at the other end  
stops when she picks it up.

Before I can say two words, the phone  
begins to shout, "I told you it's over!  
Finished! You can go  
to hell as far as I'm concerned!"

I drop the phone and pass my hand  
across my face. I close and open the door.

The couple in the sedan roll  
their windows down and  
watch, their tears stilled  
for a moment in the face of this distraction.

Then they roll their windows up  
and sit behind the glass. We  
don't go anywhere for a while.  
And then we go.

# My Boat

(VII)

Tenor Sax.

niemela

♩ = 96

**A** *short, stabbing*

Start Voice

*p*

4 "Richard, Bill, Chuck..."

*repeat phrase rising at notes slowly during names*

*pp*

9 **B** "They know who they are."

*mp*

12 "And Kristina, Merry, Cath..."

*move phrase up quicker during names*

*pp*

18 "I'm serious about this." TO **B** "darker narratives." TO **A** "Soda pop of all kinds."

*p*

22 "We'll go out into the sunny harbor."

"We may even go a little way down the coast,"

*p*

*mp*

26 "But if that doesn't work out...."

End Voice

*mf*

29 *embellish and fade*

*p* niente

## VII. My Boat

[tenor saxophone starts - wait for cue from tenor sax performer]

My boat is being made to order. Right now it's about to leave  
the hands of its builders. I've reserved a special place  
for it down at the marina. It's going to have plenty of room  
on it for all my friends: Richard, Bill, Chuck, Toby, Jim, Hayden,  
Gary, George, Harold, Don, Dick, Scott, Geoffrey, Jack,  
Paul, Jay, Morris, and Alfredo. All my friends! They know who  
they are.

Tess, of course. I wouldn't go anyplace without her.

And Kristina, Merry, Catherine, Diane, Sally, Annick, Pat,  
Judith, Susie, Lynne, Cindy, Jean, Mona.

Doug and Amy! They're family, but they're also my friends,  
and they like a good time. There's room on my boat  
for just about everyone. I'm serious about this!

There'll be a place on board for everyone's stories.

My own, but also the ones belonging to my friends.

Short stories, and the ones that go on and on. The true  
and the made-up. The ones already finished, and the ones still  
being written.

Poems, too! Lyric poems, and the longer, darker narratives.

For my painter friends, paints and canvases will be on board  
my boat.

We'll have fried chicken, lunch meats, cheeses, rolls,

French bread. Every good thing that my friends and I like.

And a big basket of fruit, in case anyone wants fruit.

In case anyone wants to say he or she ate an apple,

or some grapes, on my boat. Whatever my friends want,  
name it, and it'll be there. Soda pop of all kinds.

Beer and wine, sure. No one will be denied anything, on

my boat.

We'll go out into the sunny harbor and have fun, that's the idea.  
Just have a good time all around. Not thinking  
about this or that or getting ahead or falling behind.

Fishing poles if anyone wants to fish. The fish are out there!  
We may even go a little way down the coast, on my boat.  
But nothing dangerous, nothing too serious.  
The idea is simply to enjoy ourselves and not get scared.  
We'll eat and drink and laugh a lot, on my boat.  
I've always wanted to take at least one trip like this,  
with my friends, on my boat. If we want to  
we'll listen to Schumann on the CBC.  
But if that doesn't work out, okay,  
we'll switch to KRAB, The Who, and the Rolling Stones.  
Whatever makes my friends happy! Maybe everyone  
will have their own radio, on my boat. In any case,  
we're going to have a big time. People are going to have fun,  
and do what they want to do, on my boat.

## VIII. The Car

The car with the cracked windshield.  
The car that threw a rod.  
The car without brakes.  
The car with a faulty U-joint.  
The car with a hole in its radiator.  
The car I picked peaches for.  
The car with a cracked block.  
The car with no reverse gear.  
The car I traded for a bicycle.  
The car with steering problems.  
The car with generator trouble.  
The car with no back seat.  
The car with the torn front seat.  
The car that burned oil.  
The car with rotten hoses.  
The car that left the restaurant without paying.  
The car with bald tires.  
The car with no heater or defroster.  
The car with its front end out of alignment.  
The car the child threw up in.  
The car I threw up in.  
The car with a blown head-gasket.  
The car I left on the side of the road.  
The car that leaked carbon monoxide.  
The car with a sticky carburetor.  
The car that hit the dog and kept on going.  
The car with a hole in its muffler.  
The car with no muffler.  
The car my daughter wrecked.  
The car with the twice-rebuilt engine.  
The car with corroded battery cables.  
The car bought with a bad check.  
Car of my sleepless nights.  
The car with a stuck thermostat.  
The car whose engine caught fire.  
The car with no headlights.  
The car with a broken fan belt.  
The car with wipers that wouldn't work.  
The car I gave away.  
The car with transmission trouble.  
The car I washed my hands of.  
The car I struck with a hammer.  
The car with payments that couldn't be met.  
The reposessed car.  
The car whose clutch-pin broke.  
The car waiting on the back lot.  
Car of my dreams.  
My car.

## IX. The Cobweb

A few minutes ago, I stepped onto the deck  
of the house. From there I could see and hear the water,  
and everything that's happened to me all these years.  
It was hot and still. The tide was out.  
No birds sang. As I leaned against the railing  
a cobweb touched my forehead.  
It caught in my hair. No one can blame me that I turned  
and went inside. There was no wind. The sea  
was dead calm. I hung the cobweb from the lampshade.  
Where I watched it shudder now and then when my breath  
touches it. A fine thread. Intricate.  
Before long, before anyone realizes,  
I'll be gone from here.

# Its Course

Tenor Sax.

niemela

(X)

Solo Intro

*Slow, meandering* Start Voice "noise like water..." ADD

*pp*

7 "Right where you're living" *lively, energetic*

"Now there's no more..." *pp* *sfp*

14 "shook his hand" DROP TO

"tear up that hill" ADD *pp*

Parameter Change - 4 "and for a moment I imagine" *lively, energetic*

Voice CS Feed OFF *calm, pensive* "after in this life" ADD *sfp*

20 *pp*

30 Voice CS Feed ON Voice CS Feed OFF

"when they slap each other on the back" "disappear in a..."

40 End Voice Solo Exit

*Slow, meandering* *mf*

47 work down to

*niente*

## X. Its Course

[tenor saxophone starts – wait for cue  
from tenor sax performer]

The man who took 38 steelhead out  
of this little river  
last winter (his name is Bill Zitter,  
"last name in the directory")  
told me the river's changed its course  
dramatically, he would even say  
radically, since he first moved here,  
he and his wife. It used to flow  
"yonder, where those houses are."  
When salmon crossed that shoal at night,  
they made a noise like water boiling  
in a cauldron, a noise like you were  
scrubbing something on a washboard.  
"It could wake you up from a deep sleep."  
Now, there's no more salmon run.  
And he won't fish for steelhead  
this winter, because Mrs. Zitter's  
eaten up with cancer. He's needed  
at home. The doctors expect  
she'll pass away before the New Year.

"Right where you're living," he goes on,  
"that used to be a motorcycle run.  
They'd come from all over the country  
to race their bikes. They'd tear up  
that hill and then go down  
the other side. But they were

just having fun. Young guys. Not  
like those gangs today, those bad apples."  
I wished him luck. Shook his hand.  
And went home to my house, the place  
they used to race motorcycles.

Later, at the table in my room, looking  
out over the water, I give some thought  
to just what it is I'm doing here.

What it is I'm after in this life.  
It doesn't seem like much,  
in the end. I remembered what he'd said  
about the young men  
and their motorcycles.

Those young men who must be old men  
now. Zitter's age, or else  
my age. Old enough, in either case.  
And for a moment I imagine  
the roar of the engines as they surge  
up this hill, the laughter and  
shouting as they spill, swear, get up,  
shake themselves off, and walk  
their bikes to the top.

Where they slap each other on the back  
and reach in the burlap bag for a beer.  
Now and then one of them gunning it  
for all it's worth, forcing his way  
to the top, and then going lickety-  
split down the other side!  
Disappearing in a roar, in a cloud of dust.

Right outside my window is where  
all this happened. We vanish soon enough.  
Soon enough, eaten up.

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## APPENDIX A

## CONCATENATE

## SUPERCOLLIDER CONCATENATIVE SYNTHESIZER PLUG-IN

Concatenate.ar(corpusbufnum, live input, threshold, unit length, crossfade, matching, continuous, analysisbufnum)

Live input concatenative synthesizer. Searches analysis buffer and concatenates units from associated corpus buffer by similar/opposite audio characteristics to live input. Operates continuously or in bursts with input. Prior library analysis of each source file by Conanalyse is required (recommended Conanalyser GUI).

Can be used in simultaneous instances (with different concatenation parameters) from same/different corpus and associated analysis files for layering/chaining/multichannel effects.

Ugen is mono.

**corpusbufnum** - audio buffer number of source corpus file. Up to 48 source files (with analysis files) can be used with Concatenator GUI.

**live input** - audio input at 44100 for concatenation control.

**cut-off** - noise floor/low volume limiting in live input (0-1). Default is 0.0005

**unit length** - 0 is random unit lengths from 0.1 to 0.4 secs. A float value  $\geq 0.1$  determines fixed unit lengths up to 1.0". Lower limit is 0.1 second.

**crossfade** - click control (1), or not (0) between units.

**matching** - code for matrix of similar/opposite matching of pitch, amplitude, spectral centroid,

spectral tilt (see below) to live input.

**continuous** - continuous concatenation after sensing input (1), or burst mode with input (0).

**analysisbufnum** - buffer number of analysis data. Must be generated by Conanalysis.

matching matrix: (Use Numerical code)

- |    |  |
|----|--|
| 0  | Oppose amp, Match freq, Match spectral center, Match spectral tilt   |
| 1  | Match amp, Oppose freq, Match spectral center, Match spectral tilt   |
| 2  | Match amp, Match freq, Oppose spectral center, Match spectral tilt   |
| 3  | Match amp, Match freq, Match spectral center, Oppose spectral tilt   |
| 4  | Oppose amp, Oppose freq, Match spectral center, Match spectral tilt  |
| 5  | Oppose amp, Match freq, Oppose spectral center, Match spectral tilt  |
| 6  | Oppose amp, Match freq, Match spectral center, Oppose spectral tilt  |
| 7  | Match amp, Oppose freq, Oppose spectral center, Match spectral tilt  |
| 8  | Match amp, Oppose freq, Match spectral center, Oppose spectral tilt  |
| 9  | Match amp, Match freq, Oppose spectral center, Oppose spectral tilt  |
| 10 | Oppose amp, Oppose Freq, Oppose spectral center, Match spectral tilt |
| 11 | Oppose amp, Oppose freq, Match spectral center, Oppose spectral tilt |
| 12 | Oppose amp, Match freq, Oppose spectral center, Oppose spectral tilt |
| 13 | Match amp, Oppose freq, Oppose spectral center, Oppose spectral tilt |
| 14 | Oppose amp, Oppose freq, Oppose spectral center, Oppose spectral til |
| 15 | Match amp, Match freq, Match spectral center, Match spectral tilt    |

## Code Examples:

```
s.sendMsg(\b_allocRead, 0, "/Volumes/HD/Users/user/Folder/AudioFile.aif", 0, 0);
s.sendMsg(\b_allocRead, 1, "/Volumes/HD/Users/user/Folder/AudioFile.aif.analysis", 0, 0);
```

```
SynthDef(\concatenator, {arg corpusbuf, liveinput=0, lowThresh, unitLength, crossFade, parameterVal, contcon, gate,
anaArray;
```

```
    var env, sig1, sig2, livesig, anaArray2;
```

```
    env=EnvGen.ar(Env.asr(0,1,0.2), gate: gate, doneAction:2);
    livesig = SoundIn.ar(liveinput);
```

```
anaArray); sig1 = Concatenate.ar(corpusBuf, livesig, lowThresh, unitLength, crossFade, parameterVal, contcon,
```

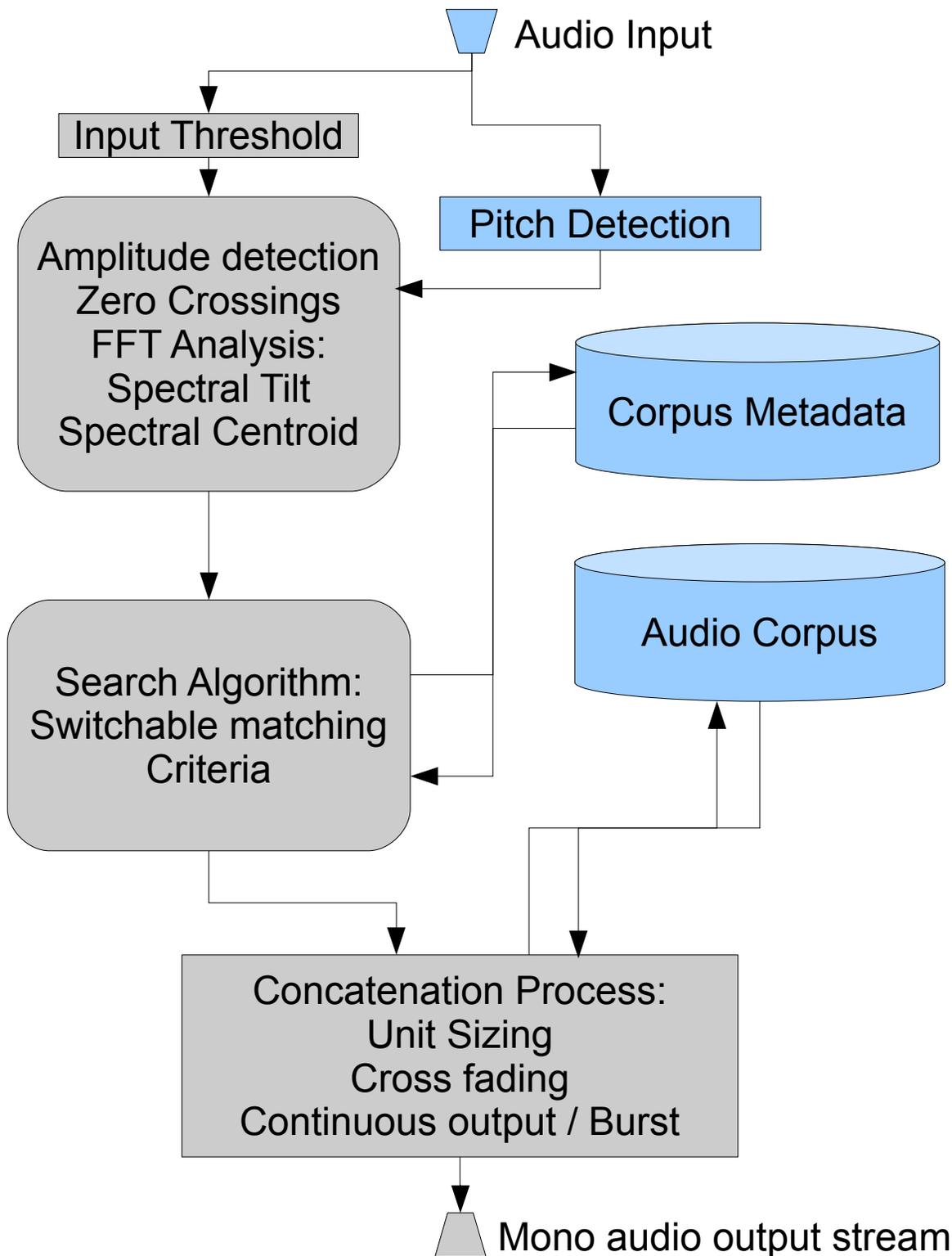
```
anaArray); sig2 = Concatenate.ar(corpusBuf, sig1, lowThresh, unitLength, crossFade, parameterVal, contcon,
```

```
    Out.ar(0, [sig1, sig2]) * env;
```

```
}).send(s);
```

```
s.sendMsg(\s_new, \concatenator, x=s.nextNodeID, 1, 1, \corpusbuf, 0, \liveinput, 0, \lowThresh, 0.008, \unitLength,
0, \crossFade, 0, parameterVal, 15, \contcon, 0, \gate, 0, \annaArray, 1);
```

APPENDIX B  
BLOCK DIAGRAM OF CONCATENATE PLUG-IN  
(grey areas are a single module - stackable)



## BIOGRAPHY

Douglas M. Niemela was born in Gainesville, Florida on December 30, 1963. He received a B.A. in Interdisciplinary Humanities at the University of Maryland in 1988, with concentrations in art history, world literature, and international law. Concurrent studies were conducted at Berklee College of Music in bass studies and jazz arranging.

From 1995 to 2001, Douglas M. Niemela was a computer graphics troubleshooter for Microsoft Corporation in Redmond, Washington, specializing in PostScript programming for product print and packaging graphics. He entered the University of Washington and received an M.M. in composition in 2006. At the University of Washington, he has taught classes in desktop music technology, assembled sound reinforcement systems for the School of Music, and assisted in concert production.

Douglas M. Niemela has composed for theater, dance, live and computer music performances while at the University of Washington. He has performed and taught on electric bass in Washington, DC, San Francisco, Boston, and Seattle.