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**Title**

Arrows That Remain

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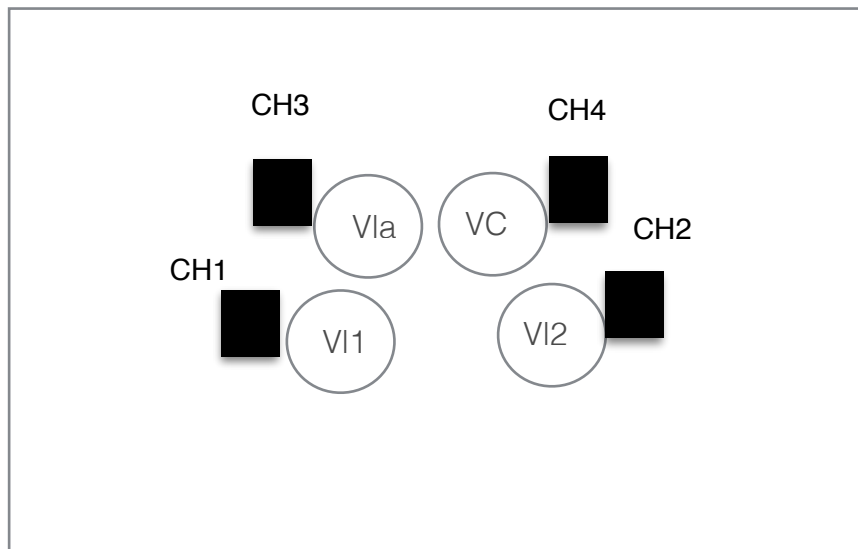
# Arrows That Remain

for String Quartet and Electronics

*Arrows That Remain* for String Quartet and Electronics was composed for Bozzini Quartet as part of Composers Kitchen 2018.

Approximate duration - 10 min.

Stage Plan:



-Monitor Speakers or speaker cones with amplifiers on adjustable stands

Ch 1-4 - channels out to mixer, all playback should blend with the natural volume of each string player.

Electronics: Pre-recorded samples of string players, played back and treated live in Max/MSP by sensor movement processing

Sensors - 4 Mini Bee accelerometers attached to each player's bow



For electronics hardware specifications and patch please get in touch with the composer:  
[info@solomiyamoroz.com](mailto:info@solomiyamoroz.com)

## Bowing on the Strings Techniques:



scratch on the string - high bow pressure to produce a scratch sound



gradual pressure applied to produce a scratch sound or pressure taken away towards normal sound

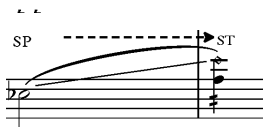


circular bow

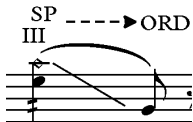
IV  
SP



Sul Ponticello with suggested string for the desired harmonic



change gradually Sul Ponticello to Sul Tasto while glissing



From Sul Ponticello to Ordinary bow position while glissing



Spatolare bow movement in parallel motion to the strings between harmonics of different cello strings. May sound scratchy and/or harmonically rich



plus is always for left hand pizzicato when there is no '+' it is back to regular arco



aggressive left hand fast movement to get to the note which will result in a harmonically rich sound



bowed behind the bridge (sub ponticello), sometimes with pressure which results in scratch, also sometimes with left hand pizz '+'

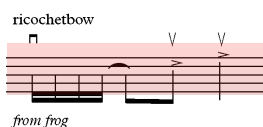


spatolare bow movement on the II string while left hand executes pizz where there is a plus sign over the note on I string

## Air Bowing/ Off the strings



moving the bow where the notes are but without touching the strings



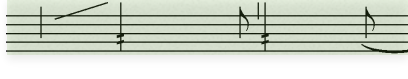
moving the bow in a ricochet motion off the strings, like a fader on a dj mixing table (sound will turn off and on rapidly with a sensor from frog or tip of the bow with approximate up and down bow indications

scratchbow

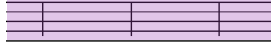


moving the bow off the strings in the motion suggested by notation, the resultant effect will sound like a rapid scratching on a record, a dj technique

scratchbow



slow airbowing



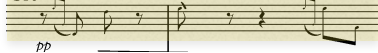
slow air bowing which will result in a slight sample playback variation

bouncebow

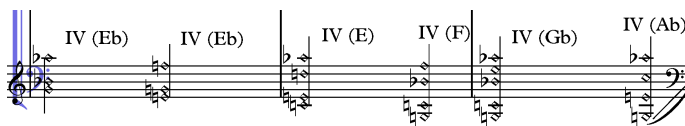


bounce the bow (shake it with some velocity to sample or sample position switch

S10 (elect. heard, hold bow in one position)



hold the bow in one place stay in one position while not moving the bow



\*Suggested Cello Sounding Multiphonics in m 151:

## Verbal Instructions:

SP.L.T - Sul Ponticello Legno Tratto  
SubP.L.T - Sub Ponticello Legno Tratto

ASP - Alto Sul Ponticello - extremely close to the bridge

spat. (spatolare) - a fast tremolo in parallel motion to the strings, usually from normal position to sul tasto but could be exaggerated from sul ponticello to sul tasto

arco norm. - back to normal ordinary bow position

airbow - imitating playback without touching strings

scratchbow - bowing while continuously controlling the sample playback, resulting in speeding up/slowing down of a sample, like scratching a record as a dj

airbow + filter - imitating playback without touching the string while controlling filter effect

ricochet air bow - ricochet-like movement of the bow without touching the strings

SP - Sul Ponticello - close to the bridge  
ST - Sul Tasto - on the finger board

## String Preparations for Violin I/II, Viola and Cello

Prep 1:



Materials: foil on the strings behind bridge and one paper clip or cork on III/IV strings

Cello Prep: just foil behind the bridge like for Violin/Viola



13

spat simile

16

*mp* *mp* *p* *col legno battuto* *SP* *p*

19

*p* simile arco norm arco norm

22 ♩=68

SP -----> ORD

*mf*

*mp*

*mp*

*spat* II I + + + +

*spat* SP

25

SP -----> ORD

*simile* + + + +

*spat*

SP -----> ORD

*simile*

28

+ + + +

*f*

*f*

*f*

*col legno tratto*

*col legno tratto*

*col legno tratto*

SP III II I III II I II IV

*sfz* *sfz* *f*

32

rit. rit. rit.

arco norm

col legno tratto

arco norm

scratchbow

1 SAMPLE 1

2

SP -----> ORD

pp pp pp pp

35

col legno tratto

arco norm

scratchbow

SP -----> ORD

p p p p

38

arco norm

arco norm

scratchbow

SP --> ORD

SP -----> ORD

SP --> ORD

p p p p

42

SP --- ORD simile

cresc.

arco SP -> ORD simile

cresc.

arco norm. with mute

*p*

=60

arco norm. with mute

*p*

=60

arco norm. with mute

*p*

=60

arco norm. with mute

*p*

cresc.

47

3

SAMPLE 1

airbow

mute off

53

SP

arco norm

4

5

scratchbow

SAMPLE 1

scratchbow

SAMPLE 1

*mf*

*f*

57

*p*

airbow SAMPLE 3 airbow + filter

*p*

airbow SAMPLE 3 airbow + filter

*p*

7 airbow SAMPLE 3 airbow + filter

6

61

ricochet air bow

ricochet air bow

ricochet air bow

8

bouncebow

sample contin.. until m.66

bouncebow

sample contin.. until m.66

bouncebow

sample contin.. until m.66

9 SAMPLE 1a scratchbow

*p*

*p*

*p*

*p*

66 SP

SAMPLE 4 scratchbow

10

*pp*

*pp*

69

SP

*mf*

*mf*

SAMPLE 4

SAMPLE 5  
airbow + filter

SAMPLE 5  
airbow + filter

11

SP → ORD

*mf*

simile

73

SP -----> ORD

simile

scratchbow

simile

SP ---> ORD

simile

SP -----

76

SAMPLE 4  
scratchbow

*mf*

CLAP SAMPLE  
airbow

12

ST SP -----> ORD

simile

arco

*mf*

3 3 3

79

arco

3 3 3

SP --> ORD

simile

SAMPLE 4  
filter scratchbow

82

spat

mf

SAMPLE 4  
filter scratchbow

sub.p

sub.p

13 mf 14 15 SP

mf

SAMPLE 6  
ricochetbow

85

SAMPLE 6  
ricochetbow

V V

SAMPLE 6  
ricochetbow

V V

SAMPLE 6 ricochetbow

V V

16 17

f



98 SAMPLE 7 bouncebow

scratchbow 3

SAMPLE 7 bouncebow

SAMPLE 7 bouncebow

23 arco sp 3 24 arco sp 3

mf

101 ricochetbow

ricochet

ricochetbow

bouncebow

ricochet

ricochet

bouncebow

ricochet

25 26 27 arco sp 28

mf p

104

mf

sub.p

sub.p

mf

mf

spat

spat

Violin I: *mf*

Violin II: *sub.p*

Cello/Double Bass: *mf*

Bassoon: *norm* ---> *ST/legno tratto* *norm* ---> *ST.L.T*

Violin I: *p* *mf* *simile*

Violin II: *norm* *sub.p* *mf*

Cello/Double Bass: *p* *mf*

Bassoon: *p* *mf*

Performance instructions: *ORD* ---> *ST*, *simile*

Violin I: *p*

Violin II: *p*

Cello/Double Bass: *p*

Bassoon: *p* *spat*

123

*mf*  
**accel.**

*mf*  
**accel.**

spat c.l.t

*p*

spat

*mf*  
**accel.**

*mf*  
**accel.**

SP

•=96 SAMPLE 3  
scratchbow

•=96 SAMPLE 6  
ricochetbow

•=96 SAMPLE 6  
ricochetbow

•=96  
29 PREPARE CELLO

126

SAMPLE 3

*mf*

*mf*

30

*mf*

128 spat

arco

*f*

scratchbow+filter  
SAMPLE 4

*f*

31 32

*f*

130

*mf* *mf* *mf* *mf*

*pizz* *pizz* *pizz*

*col legno* *col legno* *col legno*

*mf* *f* *f*

**33** *col legno* *col legno*

133

*mf* *mf* *mf* *mf*

*col legno battuto* *col legno tratto* *col legno battuto*

*col legno battuto* *col legno tratto* *col legno battuto*

*arco norm.* *col legno* *arco norm.*

*arco* *p* *arco*

*ORD--> SP* *col legno* *ORD--> SP*

**3** **3** **3**

136

*col legno* *col legno* *col legno* *col legno*

*3* *3* *3* *3*

*col legno* *S3 scratchbow* *col legno*

*p* *V* *V*

*col legno* **34** **35**

*S1 scratch* *CLAP SOUND*

PREP PREP PREP

139

col legno battuto

*mf*

col legno battuto

*mf*

scartchbow

S3

**36**  
(elect. heard, hold bow in one position)

\*quick gliss movements

142

arco

col legno battuto

arco norm. ST -> ORD

*mf*

*f*

col legno battuto

arco

S3 scartchbow

*f*

arco

*f*

**37**  
scartch/bounce

**38**  
(elect. heard not moving the bow)

**39**  
ORD -> SP

145

S8 scartchbow

S6 simile

*mf*

arco spat

col legno battuto

*mf*

*f*

S3 scartchbow

S6 (elect. heard, hold bow in one position)

**40**  
S1 scartch

**41**  
scartch/bounce

**42**  
take prep off while holding bow in one position)

**FREEZE**

148 simile S6

arco spat III S6 scratchbow

simile S6

43

151 hold in one position S3 scratchbow 3

hold in one position S6 scratchbow

hold in one position S6 scratchbow

44 arco norm \* IV (multiphonics) semi-ecrasé 45

mf

154 (elect. heard) SAMPLE 9 slow airbowing

(elect. heard) SAMPLE 9 slow airbowing

(elect. heard) SAMPLE 9 slow airbowing

46 (elect. heard, hold bow in one position) 47

III IV p

157

bouncebow col legno S9 bouncebow

bouncebow col legno *p* S9 bouncebow

bouncebow col legno *p* S9 bouncebow

III IV *p* 48 *arco norm.* 49 III IV *p* 50 *arco norm/semi-écrasé* *mf*

161 col legno tratto S9 slow airbowing S9 bouncebow

*p* col legno tratto S9 slow airbowing S9 bouncebow

*p* pizz S9 slow airbowing S9 bouncebow

51 *p* simile 52 53 *semi-écrasé* *mf*

164 col legno tratto S9 slow airbowing

col legno tratto S9 slow airbowing

pizz arco S9 slow airbowing

54 spat 55

