

T i g h t r o p e s

Darren Russo (2014)

A thesis submitted to McGill University in partial fulfillment of the requirements of the
degree of Master of Music

August 2014

Volume 1

© Darren Russo 2014

Instrumentation

Flute (+ Piccolo)

Clarinet in B \flat (+ Bass Clarinet in B \flat + Clarinet in E \flat)

Violin

Cello

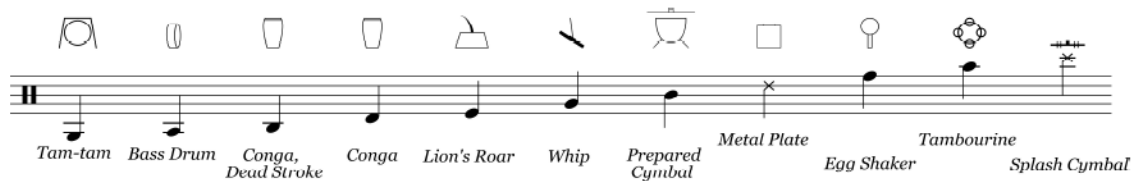
Percussion*

Piano

* **Mallets:** Marimba (5 octaves), Vibraphone, Glockenspiel

* **Assorted Percussion:** Tam-tam (largest available), Bass Drum, Conga (largest available), Lion's Roar, Whip, Prepared Cymbal**, Metal Plate, Egg Shaker, Tambourine (mounted), Splash Cymbal, Flexatone

** Place a cymbal upside down on a large timpano. Use bow on cymbal while employing glissandi on the timpano using the foot pedal.



Notes

The score is notated in C with the piccolo sounding one octave higher than written and the glockenspiel sounding two octaves higher than written.

Accidentals apply only to the note that immediately follows (they do not apply to the entire bar) except when a note is immediately repeated.

Glissandi are to be performed for the entire duration of the note.



Approx: $\frac{1}{4}$ Sharp $\frac{3}{4}$ Sharp $\frac{1}{4}$ Flat $\frac{3}{4}$ Flat

Other indications are given in the score as they occur

Trope \ 'trōp \

1. *a word or expression used in a figurative sense*
2. *a common or overused theme or device*
3. *a phrase or verse added as an embellishment or interpolation to the sung parts of the Mass in the Middle Ages*

Tropism \ 'trō-pi-zəm \

1. *the turning of an organism in response to a stimulus, either towards or away from the stimulus*

A

22 Picc. *fff*

B. Cl. To E \flat Cl.

Vln. *fff*

Vc. *fff* *fff*

Mar. *fff* 5 5 5 5 5 3 3 5 5 5

Pno. *fff* *ff* alternating hands 5 5 5 5 5 3 5 5

A

Pno. *fff* *ff* alternating hands 5 5 5 5 5 3 5 5



B

26 Picc.

E \flat Cl. Clarinet in E \flat *fff* *pp* *fff* *pp*

Vln. *pp* *fff*

Vc. *pp* *fff*

Mar. To Vibraphone 3 8^{va} 8^{va} 8^{va} 8^{va}

Pno. *loco* *loco* *loco* *loco* **B**

31

Picc. *p* *fff* *p* *mp* *fff*

E♭ Cl. *pp* *fff* *pp* *p* *fff* *pp* *p* *f* *fff* *pp*

Vln. *fff* *pp* *pp* *fff* *pp* *pp* *fff* *p* *fff* *fff* *pp* *fff* *sul pont.*

Vc. *pp* *pp* *fff* *pp* *pp* *fff* *pp* *fff* *pp* *fff* *pp* *fff* *p*

Vib.

Pno. *pp* *fff* *pp* *fff* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp*

39

Picc. *pp* *fff* *pp* *fff* *pp* *fff* *pp*

E♭ Cl. *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp*

Vln. *pp* *p* *fff* *pp* *p* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff*

Vc. *fff* *pp* *fff* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp*

Vib. *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp*

Pno. *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp* *pp* *fff* *pp*

Vibraphone (motor on: med)

* - Play passage approx. one quarter-tone higher than written.

46

Picc. *fff* *pp* *fff*

E♭ Cl. *fff* *pp* *fff* *pp*

Vln. *pp* *fff* *pp* *fff*

Vc. *pp* *fff* *pp*

Vib. *fff* *pp* *fff* *pp* *fff*

Pno. *pp* *pp* *fff*

tr *ord.* *s.p.* *sul pont.*

48

Picc. *f* *pp* *n.*

E♭ Cl. *fff* *pp*

Vln. *p* *ord.* *s.p.* *ord.* *pp* *mf* *pp*

Vc. *fff* *gliss.* *fff* *ppp* *p*

Vib. *pp* *pp*

Pno. *fff* *pp* *fff* *pp* *ppp*

rit. **C** ♩ = c. 96

52 To Flute

Picc. *pp* *mf* *pp*

E♭ Cl. *mp* *pp* *mp* *pp* *p* *pp*

Vln. *flautando* *pp* *mf* *pp*

Vc. *s.p.* (tr) *ord.* *mf* *p* *ppp* *pp*

Vib. *mf* *pp* *pp* *mf* *pp* *p*

Pno. *f* *ppp* *ppp* *mf* *ppp* *p*

55 Flute

Fl. *ppp* *p* *ppp*

E♭ Cl. *ppp* *p* *ppp* *ppp*

Vln. *senza vib.* *ppp* *p* *ppp*

Vc. *ppp* *mp*

Vib. *pp*

Pno. *ppp* *mp*

D

58

Fl. *ff* *pp* *f*

Es. Cl. *p* *ppp* *f*

Vln. *pp* *ff*

Vc. *p* *ff*

Vib. *f*

Pno. *f* *ff*

D

61

Fl. *mp* *ff* *mp*

Es. Cl. *p* *mf* *ff* *mp*

Vln. *pp* *mf* *mf* *fff* *mp*

Vc. *p* *pp* *p*

Vib. *mp* *mf* *ff*

Pno. *mp* *ff* *p sub.*

64

Fl.

E♭ Cl.

Vln.

Vc.

Vib.

Pno.

To Marimba

68

Fl.

E♭ Cl.

Vln.

Vc.

Vib.

Pno.

72

Fl. *pp*

E♭ Cl.

Vln. *mf*

Vc.

Vib. *ff*

Pno. *loco*



75

Fl. *fff* *p*

E♭ Cl. *fff* *p*

Vln. *fff* *p*

Vc. *p* *fff* *p*

Mar. *fff* *To Vibraphone + Glockenspiel*

Pno. *fff* *ff* *mp sub.*

E

78

Fl. *ff* *p* *ff* *pp*

E♭ Cl. *ff* *p* *ff* *mf*

Vln. *fff* *p* *fff* *p* *mf*

Vc. *fff* *p* *ff* *mp*

Vibraphone *ff* *mp* *ff* *mp* *ff* *mf*

Pno. *ff* *mp sub.* *ff* *mp* *ff* *mf*

81

Fl. *ff* *ppp* *ff* *ff* *p*

E♭ Cl. *ff* *ppp* *ff* *f* *ff* *p*

Vln. *ff* *ppp* *f* *ff* *p*

Vc. *ff* *mp* *ff* *mp*

Vibraphone *ff* *mp* *ff* *fff*

Pno. *ff* *mp sub.* *ff* *fff*

F Subito $\text{♩} = \text{c.}116 - 126$ rit. . . . $\text{♩} = \text{c.}96$

84

Fl. *fff* *p* < *fff* > *pp* *fff* *pp* < *fff* > *p* *fff* *mp*

Es. Cl. *fff* > *p* < *fff* > *pp* < *fff* > *pp* < *fff* > *mp*

Vln. *fff* > *p* < *fff* > *pp* < *fff* > *pp* < *fff* > *p* *ff* *fff* *mp* *pizz.*

Vc. *ff* *mp* < *fff* > *mp* *fff* *mp* *pizz.*

Vib. *mf* < *fff* > *p* < *fff* > *p* < *fff* > *p* *fff*

F Subito $\text{♩} = \text{c.}116 - 126$ rit. . . . $\text{♩} = \text{c.}96$

Pno. *fff* *p*

90

Fl. *ff sub.* *mp*

Es. Cl. *f* *ff* *mp*

Vln. *ff* *mp* *f* *ff* *mp* *arco*

Vc. *ff* *mp* *f* *ff* *arco*

Vib. *ff* *f* *mf* *ff*

Pno. *ff sub.* *p sub.* *ff sub.*

H

109

Fl. *pp* *p* *mp* *p* *mp*

B. Cl. *p* *ff* *p* *p* *f*

Vln. (ord.) *pp* *mf*

Vc. *pp* *mf* *pp*

Vib. *p* *mf* *mp* *mf* *mp*

Pno. *mf > pp* *p* *mp* *p*

H

115

Fl. *mf* *mp* *pp* *f* *mp*

B. Cl. *p* *f* *p* *mp*

Vln. *pp* *mf* *pp* *p*

Vc. *mf* *pp* *pp* *ff* *pp*

Vib. *mf* *mp* *mf* *f*

Pno. *mp* *p* *mp* *mf* *mp*

119

Fl. *mp* *ff* *mp* *f*

B. Cl. *f* *mp* *f* *mp*

Vln. *f* *mp* *f* *p*

Vc. *pp* *ff* *pp* *p*

Vib. *mf* *f* *f*

Pno. *mf* *f* *mp* *f*

122

Fl. *mp* *f* *ff* *mf* *f* *ff*

B. Cl. *f* *mf* *ff* *mf* *ff*

Vln. *mp* *f* *mf* *ff* *mf*

Vc. *f* *p* *mp* *f* *mp* *ff*

Vib. *mp* *f* *mp* *ff*

Pno. *mp* *f* *mp*

125

Fl. *mf* *ff* *f* *ff*

B. Cl. *ff* *mf* *ff* *mf* *ff*

Vln. *ff* *ff* *mf* *ff*

Vc. *ff* *mf* *f* *mf* *ff*

Vib. *mf* *ff* *mf* *ff*

Pno. *ff* *mf* *ff*

128

Subito ♩ = 96

Fl. *fff* *f* *ff* *fff* *mf*

B. Cl. *fff* *f* *ff* *fff* *mf*

Vln. *fff* *f* *ff* *fff* *mp*

Vc. *fff* *f* *ff* *fff* *mp*

Vib. *fff* *f* *ff* *mf* *fff* *mp*

Pno. *fff* *f* *ff* *fff* *mp*

Subito ♩ = 96

I ♩ = 96

132

Fl. *fff* *mp* *fff* *mf* *fff* *mp*

B. Cl. *fff* *mp* *fff* *mf* *fff* *mp*

Vln. *fff* *p* *fff* *mf* *fff* *mp*

Vc. *fff* *p* *fff* *mf* *fff* *mp*

Vib. *fff* *mf* *fff* *mf* *fff* *mp*

Pno. *fff* *f* *fff* *mp* *fff* *mf*

I ♩ = 96

136

Fl. *mp* *fff* *f* *fff* *p*

B. Cl. *fff* *f* *fff* *p*

Vln. *mp* *fff* *f* *fff* *p*

Vc. *fff* *f* *fff* *p*

Vib. *fff* *f* *fff* *p*

Pno. *fff* *p* *fff* *mf*

140

Fl. *fff* *p* *fff* *f* *fff* *p* *fff* *f*

B. Cl. *fff* *p* *fff* *f* *fff* *p* *fff* *f*

Vln. *fff* *p* *fff* *f* *fff* *p* *fff* *f*

Vc. *fff* *p* *fff* *f* *fff* *p* *fff* *f*

Vib. *fff* *p* *fff* *f* *fff* *p* *fff* *f*

Pno. *fff* *mf* *fff* *mp* *fff* *mf* *fff* *mp*

Detailed description: This system contains measures 140 through 143. It features six staves: Flute, Bass Clarinet, Violin, Viola, Vibraphone, and Piano. The music is in 4/4 time and includes various dynamics such as fortissimo (fff), piano (p), and mezzo-forte (mf). There are numerous triplets and slurs throughout the score.

144

Fl. *fff* *f* *p* *fff* *p* *fff* *p*

B. Cl. *fff* *f* *p* *fff* *p* *fff* *p*

Vln. *fff* *f* *p* *fff* *p* *fff* *p*

Vc. *fff* *f* *p* *fff* *p* *fff* *p*

Vib. *fff* *f* *mp* *fff* *p* *fff* *p*

Pno. *fff* *f* *fff* *f* *mf*

Detailed description: This system contains measures 144 through 147. It features the same six staves as the previous system. The music continues in 4/4 time with dynamic markings including fortissimo (fff), piano (p), forte (f), and mezzo-piano (mp). The score includes complex rhythmic patterns and slurs.

148

Fl. *fff* *f* *gliss.* *ffff* To Piccolo

B. Cl. *fff* *f* *ffff* To E \flat Clarinet

Vln. *fff* *f* *ffff*

Vc. *fff* *f* *ffff*

Vib. *fff* *f* *ffff* Take hard mallets

Pno. *ffff* Cadenza

151

Pno. *loco*

154

Fl. -

B. Cl. -

Vln. *fff* *fff*

Vc. *fff* *fff*

Vib. (Hard mallets) *mp* *f* *mp* *mp*

Pno.

156 *Picc.*

Fl. *ff* *f*

E♭ Cl.

Vln. *ff* *8va*

Vc. *ff* *gliss.*

Vib. *ff* *mp* *ff* *5* *6*

Pno.



158 **J**

Picc. *fff* *fff*

Clarinet in E♭ *fff*

Vln. *fff* *fff* *8va*

Vc. *fff* *gliss.* *fff*

Glockenspiel *fff* *6*

J

Pno. *loco* *loco* *3* *8va*

K

166 $\text{♩} = 126$
G.P.

Picc. *ffff* *ppp* To Flute

E♭ Cl. *ffff* *pp* *pp* *ff* *pp* *pp* *ff* *pp* *f* *pp*

Vln. *ffff* *p* *mf* *ff* *pp* *pp* *ff* *pp* *f* *pp*

Vc. *ffff* *p* *gliss.* *ff* *pp* *pp* *ff* *pp* *f* *pp*

Glock. To Assorted Percussion (Conga + Metal Plate) *ffff*

K

$\text{♩} = 126$
G.P.

Pno. *ffff* *p* *pp* *p* *pp* *mp* *pp*

178

Picc. Flute *p* *ff* *p* *ff* *p* *ff* *pp* *ff* *pp* *ff* *pp* *mp* *ff*

E♭ Cl. *mp* *ff* *pp* *f* *pp* *ff* *pp* *ff* *pp* *ff* *pp* *ff* *pp* *ff* *pp* *mp* *ff*

Vln. *mp* *ff* *pp* *f* *pp* *ff* *pp* *ff* *pp* *f* *pp* *mp* *ff*

Vc. *mp* *ff* *pp* *f* *pp* *ff* *pp* *ff* *pp* *f* *pp* *mp* *ff*

Perc. Conga, Metal Plate *ff*

Pno. *mp* *pp* *mp* *pp* *mf* *pp* *f* *pp* *f* *pp* *p* *ff*

190

Fl. *ff*

E♭ Cl. *pp* *ff* *f* *pp*

Vln. *pp* *ff* *f* *pp*

Vc. *pp* *gliss.* *ff* *f* *pp*

Perc.

Pno. *ff* *mp* *pp*

197

Fl. *f* *fff* *f* *pp*

E♭ Cl. *pp* *f* *fff* *f* *pp*

Vln. *pp* *f* *fff* *f* *pp*

Vc. *pp* *gliss.* *f* *fff* *f* *pp*

Perc.

Pno. *f* *fff* *mp* *pp*

L molto accel. . . Subito ♩ = 112 . . . molto accel. . . Subito ♩ = 112

225

Fl. *pp* *p* *ff* *pp* *p* *ff*

E♭ Cl. *pp* *p* *ff* *pp* *p* *ff*

Vln. *pp* *p* *ff* *pp* *p* *ff*

Vc. *pp* *p* *ff* *pp* *p* *ff*

Perc. *f*

Pno. *mp* *mf*

L molto accel. . . Subito ♩ = 112 . . . molto accel. . .

232

Fl. *pp* *p* *ff* *p* *ff* *mp*

E♭ Cl. *pp* *p* *ff* *p* *ff* *mp*

Vln. *pp* *p* *ff* *p* *ff* *mp*

Vc. *pp* *p* *ff* *p* *ff* *mp*

Perc. *f*

Pno. *mf* *mf* *f*

Subito ♩ = 112 **molto accel.**

240

Fl. *p* *fff* *p* *ff* *p* *pp*

Es. Cl. *p* *fff* *p* *ff* *p* *pp*

Vln. *p* *fff* *p* *ff* *p* *pp*

Vc. *p* *fff* *p* *ff* *p* *pp*

Perc. *f*

Subito ♩ = 112 **molto accel.**

Pno. *f* *f*

Subito ♩ = 104

246

Fl. *p* *fff* *p* *ff* *p* *ff*

Es. Cl. *p* *fff* *p* *ff* *p* *ff*

Vln. *p* *fff* *p* *ff* *p* *ff*

Vc. *p* *fff* *p* *ff* *p* *ff*

Perc. *f*

Subito ♩ = 104

Pno. *fff* *pp* *fff* *ff* *f* *ff*

molto accel.

251

Fl. *p* *fff* *p* *fff* *f*

E♭ Cl. *p* *fff* *p* *fff* *f*

Vln. *p* *fff* *p* *fff* *f*

Vc. *p* *fff* *p* *fff* *f*

Perc. *ff* *ff* *ff*

Pno. *fff* *fff* *fff*

8^{va} *loco*

molto accel.

♩ = 112 molto accel. **Subito ♩ = 112**

255

Fl. *p* *fff* *p* *fff* *fff*

E♭ Cl. *p* *fff* *p* *fff* *fff*

Vln. *p* *fff* *p* *fff* *fff*

Vc. *p* *fff* *p* *fff* *fff*

Perc. *ff*

Pno. *f* *mf* *fff* *ppp*

molto accel. . . . ♩ = 112 **molto accel.** ♩ = 112 **molto accel.** ♩ = 112

260

Fl. *pp* *pp* *ff* *ff* *mf* *fff*

E♭ Cl. *ppp* *pp* *f* *ff* *mf* *fff*

Vln. *pp* *f* *ff* *mf* *fff*

Vc. *f* *ff* *mf* *fff*

Perc. *fff*

To Tam-tam + Bass Drum

molto accel. . . . ♩ = 112 **molto accel.** ♩ = 112 **molto accel.** ♩ = 112

Pno. *fff* *mp* *ff* *ff* *mf* *fff*



267 **M**

Fl. -

E♭ Cl. *To Clarinet* -

Vln. -

Vc. -

Perc. *fff*

Tam-tam (choke on rests)

M

Pno. *fff*

N = 116 - 126

273

Fl. *ppp* Clarinet in B \flat *ppp*

Vln. *ppp*

Vc. *ppp*

Perc. Bass Drum *fff*

Pno. *ff*

N = 116 - 126



280

Fl. *f* *ff* *fff*

Cl. *mf* *ff* *fff*

Vln. *mf* *ff* *fff*

Vc. *mf* *ff* *fff*

Perc.

Pno. *mf* *ff* *fff* *loco*

283

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

289

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

O

sm loco

295

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

300

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

P

306

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

Take Whip

fff

pp *fff* *p* *fff* *pp* *mf* *pp*

p *mf* *pp* *ff* *p*

mf *pp* *mf* *pp*

fff *pp* *pp*



311

Fl.

Cl.

Vln.

Vc.

Perc.

Pno.

pp *ff* *p* *p* *ff* *p*

ff *pp* *p* *f* *p* *f*

fff *mf* *f* *p* *mf* *f* *p*

pp *mf* *f* *p* *fff* *mf* *f* *p*

pp *f* *pp* *f* *mp* *f* *mp*

316

Fl. *p* *ff* *p* *ff* *p* *ff* *mf*

Cl. *ff* *p* *f* *p* *ff* *p* *ff* *mf*

Vln. *mf* *f* *p* *ff* *p* *ff* *mf*

Vc. *ff* *mf* *ff* *mf* *ff* *p* *ff* *mf*

Perc. Whip To Splash Cymbal *f*

Pno. *f* *pp* *mf* *ff* *mf* *ff* *p* *f* *mp* *ff*

321

Fl. *ff* *mf* *ff* *fff* *p*

Cl. *ff* *mf* *ff* *fff* *p*

Vln. *ff* *mp* *ff* *fff* *p*

Vc. *ff* *mf* *ff* *fff* *p*

Perc. Splash Cymbal *p*

Pno. *mp* *pp* *f* *pp* *mf*

324

Fl. *fff* *p* *ff*

Cl. *fff* *p* *mf* *ff* *mp*

Vln. *fff* *p* *mf* *ff*

Vc. *fff* *p* *mf* *ff* *p* *ppp*

Perc. *f* *choked*

Pno. *f* *pp* *f* *p* *ff* *p* *f* *pp*

Q

327

Fl. *pp* *ff* *pp* *mf* *ff* *mf*

Cl. *ff* *pp* *mp* *ff* *mf*

Vln. (ord.) *pp* *ff* *pp* *mp* *ff* *mp*

Vc. *p* *fff* *mp* *gliss.* *ff* *mf*

Perc. *mp*

Pno. *f* *pp* *p* *p* *ff* *mp* *pp*

Q

331

R *finger clicks*

Fl. *f possible* *p* *ff* *p* *ff*

Cl. *fff* *p* *ff* *p* *ff*

Vln. *fff* *p* *ppp* *mf* *ppp* *mf*

Vc. *fff* *p* *ppp* *mf* *ppp* *mf*

Perc. *ff* *pp* *mf*

Take Egg Shaker Egg Shaker

Pno. *ff* *pp* *mf*

R

lift pedal gradually

334

Fl. *p* *ff* *p* *ff* *p* *fff* *p* *ff*

Cl. *p* *ff* *p* *ff* *p* *f* *p* *ff*

Vln. *ppp* *mf* *p* *f* *mp*

Vc. *ppp* *mf* *p* *f* *mp*

Perc. *mf* *p* *p* *f* *p*

Pno. *f* *p*

337

Fl. *p* *ff* *pp* *ff*

Cl. *p* *ff* *pp* *ff*

Vln. *pp* *f* *pp* *mf* *pp* *ff*

Vc. *pp* *f* *pp* *mf* *pp* *ff*

Perc. *p* *f* *f*

Pno. *pp* *mp* *pp* *ff*

Put down Egg Shaker

Tambourine (with sticks)

Conga (with sticks)

Push back music stand

muted

340

Fl. *p* *mf* *p* *mf* *p* *mf* *mp* *mf*

Cl. *p* *mf* *p* *mf* *p* *mf* *mp* *mf*

Vln. *p* *mf* *p* *mf* *p* *mf* *mp* *mf*

Vc. *p* *mf* *p* *mf* *p* *mf* *mp* *mf*

Perc. *f*

Pno. *mf* *p* *mf* *p* *mf* *p* *mf*

Splash Cymbal

S

345

Fl. *gliss.* *ff pp* *p mp mf f*

Cl. *gliss.* *ff pp* *p mp mp f mf*

Vln. *ff pp* *gliss.* *ff*

Vc. *ff* *pppp pp* *gliss.*

Take Flexatone and Bow

Perc.

S

Pno. *ff* *grv* *f ff p*



T

352

Fl. *gliss.* *f ff* *fff* *f* *gliss.*

Cl. *gliss.* *ff f ff* *fff* *f* *gliss.*

Vln. *p* *pizz.* *fff* *3*

Vc. *gliss.* *ff* *fff* *3*

Flexatone (arco)

Flex. *gliss.* *p f* *gliss.* *gliss.* *gliss.* *gliss.* *gliss.*

T

Pno. *fff* *muted* *ord.*

U

356

Fl. *gliss.* *fff* *f* *fff* *f* *fff* *f* *fff* *f* *fff* *f* *fff*

Cl. *gliss.* *fff* *f* *fff* *f* *fff* *f* *fff* *f* *fff* *f* *fff*

Vln. *arco* *gliss.* *f* *fff* *f* *fff* *f* *fff* *f* *fff* *f* *fff*

Vc. *arco* *gliss.* *f* *fff* *f* *fff* *f* *fff* *f* *fff* *f* *fff*

Flex. *To Conga (with sticks)* *ff*

U

Pno.



V

362 *To Piccolo*

Fl. *To Piccolo*

Cl. *To Bass Clarinet (quickly)*

Vln. *Cadenza* *fff* *pizz.* *gliss.* *feroce* *8va* *8va*

Vc. *pizz.*

Perc. *To Piccolo*

V

Pno. *Return music stand to original position.* *fff*

W

freely - quasi cadenza

Picc. 363 *fff* 5 3 5 *mf* *ff* *pp*

B. Cl. Bass Clarinet in B \flat *p* *ff* *pp* *colla piccolo*

Vln. *pp* *ff* *pp* *colla piccolo*

Vc. *fff* *pp* *ff* *pp* *colla piccolo* *f* *f*

Perc. Conga (with sticks) *fff* To Prepared Cymbal (with Bow)

Pno. *fff* *ff* *pp*

W

Picc. *fff* *ff* *pp*

B. Cl. *fff* *pp* *ff* *pp*

Vln. *fff* *pp* *ff* *pp*

Vc. *fff* *pp* *ff* *pp*

Perc. *fff* *pp* *ff* *pp*

Pno. *fff* *pp* *ff* *pp*



X

Picc. 367 *ff* *ppp* *mp* *f*

B. Cl. *ff* *ppp* *mp* *f*

Vln. *ff* *ppp* *mp* *f*

Vc. *ff* *ppp* *mp* *f*

Perc. Prepared Cymbal (arco) *p* *f* *gliss.* *gliss.* *gliss.* To Marimba

Pno. *ff* *ppp* *mp* *f*

X

371

Picc.

B. Cl.

Vln.

Vc.

Mar.

Pno.

f possible

fff

fff

fff

fff

376

Picc.

B. Cl.

Vln.

Vc.

Mar.

Pno.

Y

Y

383

Picc.

B. Cl.

Vln.

Vc.

Mar.

Pno.

p *fff*³

p *fff*³

*fff*³

Marimba



390

Picc.

B. Cl.

Vln.

Vc.

Mar.

Pno.

p *fff*³

p *fff*³

p *fff*³

396

Picc.

B. Cl.

Vln.

Vc.

Mar.

Pno.

403

Picc.

B. Cl.

Vln.

Vc.

Mar.

Pno.

Z ♩ = 126 **accel.**

f *fff* *p*

pp *cresc. poco a poco*

pp *cresc. poco a poco*

To Lion's Roar

Z ♩ = 126 **accel.**

pp sub. *cresc. poco a poco*

lift pedal gradually

accel.

410

Picc. *ppp*

B. Cl. *mp* *più cresc.* *mf* *più cresc.*

Vln. *p* *mf* *cresc. poco a poco*

Vc. *mp* *più cresc.* *mf* *più cresc.*

Perc.

accel.

Pno. *mp* *più cresc.* *mf* *più cresc.*



accel.

418

Picc. *mf* *cresc. poco a poco*

B. Cl. *f* *più cresc.* *ff*

Vln. *f* *più cresc.* *ff*

Vc. *f* *più cresc.* *ff*

Perc.

accel.

Pno. *f* *più cresc.* *ff*

accel. $\text{♩} = 180$ **accel.**

425

Picc. *ff* *fff*

B. Cl. *molto cresc.* *fff*

Vln. *molto cresc.* *fff*

Vc. *molto cresc.* *fff*

Perc. **||**

Pno. *molto cresc.* *fff*

accel. **as fast as possible**

432

Picc. *ancore più cresc.* *fff*

B. Cl. *ancore più cresc.* *fff*

Vln. *ancore più cresc.* *fff*

Vc. *ancore più cresc.* *fff*

Perc. **||** *fff* *molto espr.* **Lion's Roar**

Pno. *ancore più cresc.* *fff*

accel. **as fast as possible**

Tightropes

Darren Russo

Schulich School of Music
McGill University, Montreal

A thesis submitted to McGill University in partial fulfillment of the
requirements of the degree of Master of Music

August 2014

Volume 2

© Darren Russo 2014

Abstract / Résumé

Tightropes is a work for sextet (fl., cl., vl., vc., pno. and perc.) that explores the concepts of trope and tropism as extended metaphors for music composition through the exploitation and manipulation of commonplace musical idioms. The thesis is in two parts: the musical work in full score followed by an analytic text. The analysis first defines these extramusical concepts and correspondingly explores techniques for their application as musical metaphors. Following this, it discusses my intention to create a piece of music that is precarious in nature, manipulating a listener's sense of expectation as a musical metaphor for the suspenseful nature of tightrope as a subject. The consolidation of these musical metaphors necessitated a novel approach to building musical character and musical form. The different characters utilize in various ways a system of weighted pitches drawing other pitches toward them with decreasing rhythmic values (creating a "magnetic" attraction). The form is constructed as an extended string of distinct and contracting musical moments. This approach is explored in detail in the analysis along with its effects on a listener's temporal perception. The conclusion opens the door to further compositional exploration by observing how the flexibility of these techniques facilitates integration across multiple musical idioms and their unification into an idiosyncratic musical language.

Tightropes est une oeuvre pour sextuor (fl., clar., vl., vc., piano et perc.) qui explore les concepts de trope et de tropisme comme métaphores pour la composition musicale et leur potentiel de manipulation d'idiomes familiers. La thèse est en deux parties : la partition de l'oeuvre suivie d'un texte analytique. L'analyse s'emploie en un premier temps à définir ces concepts extramusicaux puis procède à une exploration des méthodes d'application de ces concepts comme métaphores musicales. Suivra une présentation du projet visant à créer une pièce de musique de nature précaire, en se jouant des attentes des auditeurs de la même manière qu'un funambule crée le suspense en tenant ses spectateurs en haleine. L'intégration de ces métaphores musicales a conduit au développement d'une nouvelle façon de définir les caractères musicaux et d'envisager la forme. Les différents caractères utilisent un système de notes polarisées autour desquelles gravitent d'autres notes dont la durée se raccourcit plus elles s'en approchent (créant une sorte d'attraction "magnétique"). La forme quant à elle sera articulée comme un écheveau de "moments musicaux" distincts qui se contractent de plus en plus. Cette approche est présentée en détails de même que ses implications au niveau de la perception temporelle. La conclusion ouvre la voie à de futures démarches compositionnelles en soulignant que la flexibilité de ces techniques permet une intégration plusieurs idiomes musicaux et leur fusion en un langage syncrétique autonome.

Acknowledgements

I wish to thank my supervisor Denys Bouliane for his tireless support, advice and insight as I prepared the music and analytic text for *Tightropes*. His generosity with his time, his encouragement and his critical insight were invaluable in helping me complete this project. Our dialogue throughout my Master's studies at McGill University have helped me codify musical systems into a personal musical language that will serve me for many years in my career as a composer.

I would also like to thank my colleague, Luke Nickel for the conversation that led to the choosing of the work's title.

Lastly, I would like to thank my family and friends for their support throughout my work on this thesis, providing encouragement, the occasional diversion and sporadic meals to help ease the strain of tackling this large, rewarding project.

Table of Contents

Introduction	1
Chapter 1 – Tropes & Tropism	2
1.1 Definitions of <i>Trope</i> and <i>Tropism</i>	2
1.2 Historical Perspectives	2
1.3 Tropes & Tropism in <i>Tightropes</i> : Musical Metaphors	3
Chapter 2 – Tropes & Tropism: Towards an Interrelated System of Pitch and Rhythm	5
2.1 Weighted Pitch and Corresponding Scale with Rhythmic Profile	5
2.2 Proliferation / Self-Generation of Scales	6
2.3 Microtonal Inflections	6
2.4 Harmonic Proliferation	8
2.5 Harmonic Progression and Predictability	8
Chapter 3 – A Web of "Moments Musicaux"	9
3.1 – The Moments of Section I: Four Moments of distinct character	9
3.2 – The Moments of Section II: Moments on a Tightrope	11
Chapter 4 – Proliferation (Tropes & Tropism as a Formal Approach)	18
4.1 Section I – <i>Tropes</i> as Formal Approach	18
4.1a The Development of Section I	20
4.2 A Moment of Silence and a Solution to Form	22
4.3 Section II – <i>Tropism</i> as Formal Approach	23
Chapter 5 – Trope as Metonymy: Time Fields & Form	25
5.1 <i>Metonymy</i> : A Path to Temporal Perception	25
5.2 Scale Sets <i>vis-à-vis</i> Harmonic Progression: Their Roles in Section I	25
5.3 Harmonic Progression <i>vis-à-vis</i> Scale Sets: Their Roles in Section II	26
5.4 The Convergence of Time Fields	28
Chapter 6 – Expectation: Timing and Perception	30
6.1 Music and Time – A Subjective Experience	30
6.2 Expectation in Section I	33
6.3 Deviation in Section II	35
6.4 The Perception of Global Form	37
Conclusion	38
Bibliography	39

Introduction

Tightropes is a piece for sextet conceived from a desire to formalize my interest in the exploitation of commonplace idioms through innovative transformations. Composed over the winter and spring of 2013-2014, the work exploits two familiar musical models, or *tropes*: the diatonic scale and the I – V – vi – IV harmonic progression. It then subjects them to processes of distortion and interpolation rendering the familiar strange. Through repetition of these processes, multiple layers of transformations proliferate, generating nested structures and contributing to a tiered formal design of superimposed time-fields.

The piece is scored for a sextet consisting of flute (doubling on piccolo), clarinet (doubling on bass clarinet and clarinet in E-flat), violin, cello, percussion and piano. It was composed as part of a workshop with *Ensemble Transmission* that took place in Montreal on June 5th and 6th, 2014. The duration of the piece is approximately 13 minutes.

This document will examine how definitions and historical perspectives of *trope*, along with the etymologically related word *tropism*, served as an inspirational model for the generation and development of interrelated musical ideas and a novel approach to musical form expressed in several temporal layers (time-fields).

Chapter 1 – Tropes & Tropism

1.1 Definitions of *Trope* and *Tropism*

A *trope* is defined as: 1) "a word or expression used in a figurative sense", such as metonymy or metaphor, 2) "a phrase or verse added as an embellishment or interpolation to the sung parts of the Mass in the Middle Ages" or 3) "a common or overused theme or device: *cliché*."¹

Tropism is defined as: 1) the involuntary orientation by an organism or one of its parts in response to a stimulus, either towards or away from the stimulus, or as 2) an innate tendency to react in a definite manner to stimuli.² A very well-known example of this phenomenon is the inclination of a sunflower bud to orient its floral head with the movement of the sun from dawn until dusk (also known as *heliotropism*). As the plant matures, it orients itself in a more rigid easterly direction (*phototropism*).³

1.2 Historical Perspectives

Both *trope* and *tropism* share their etymology with the Greek root *trópos*, meaning a turn, way, manner, style or musical mode.⁴ This is derived from the Greek verb *trepein*, meaning to turn, direct, alter or change.⁵ All of these meanings have filtered their way down into the English derivatives of *trope* and *tropism*.

For example, *trope*, in the sense of a figure of speech, draws its meaning from the expression *turn of phrase*. Likewise, *trope* as a common or overused theme or device is closely related to *manner* and *style*. The melismatic interpolations in the Medieval Mass are related to the meanings of *musical mode*, which in turn, is more closely related to *trepein* in the sense of *direct*, *alter*, and *change*. While *alter* and *change* are self-

¹ Merriam-Webster.com, s.v. "trope," <http://www.merriam-webster.com/dictionary/trope> (accessed June 22, 2014).

² Merriam-Webster.com, s.v. "tropism," <http://www.merriam-webster.com/dictionary/tropism> (accessed June 22, 2014).

³ G. G. Polikarpov, "Sunflower's blooming floscule is a compass," *Nature* 272:122 (March 9, 1978), 122 <http://www.readcube.com/articles/10.1038/272122c0> (accessed June 22, 2014).

⁴ Merriam-Webster.com, s.v. "trope."

⁵ Ibid.

explanatory in relation to interpolated melismas, the relationship to *direct* can be explained by the directional nature of a musical mode in melodic phrases. This relationship is what led to the exploration of the properties of *tropism* applied to musical modes in *Tightropes*.

Furthermore, the practice of *tropes* as a system of interpolating melismas into the Medieval Mass was one that flourished from the 9th Century until the 15th Century where it was abused and finally banned by the Tridentine reform.⁶ The eventual abuse of this technique is interesting in that it relates to the more recent meaning of *trope* as an overused device, and also from a personal standpoint, the idea of the proliferation and abuse of a compositional technique appeals to me artistically. The use of commonplace idioms in *Tightropes* along with the use of unrefined musical objects and their unbridled proliferation is an attempt to emulate this concept of "abused practice."

1.3 Tropes & Tropism in *Tightropes*: Musical Metaphors

Early in the conception of this piece, I collected a set of extremely commonplace musical ideas and experimented with fresh ways of presenting them while exploring novel ways of developing the material. Two very commonplace idioms I chose were the ever-enduring diatonic scale and the I – V – vi – IV pop-punk progression present in an overwhelming amount of mass-produced contemporary pop music.⁷ Being aware of their existence as a *trope*, I explored other definitions of the word and adopted them as musical metaphors to distort the basic musical concepts. Additionally, the directional tendencies of the diatonic scale informed the decision to explore metaphorical applications of *tropism* as a means of further distortion. The result was a set of multi-octave quasi diatonic scales with *weighted pitches* acting as metaphorical stimuli that attract the other pitches toward them with increasing rhythmic intensity. It evoked the character of a piece of string being pulled taut, then slackened and pulled taut again. While discussing this

⁶ Oxford Music Online, s.v. "trope," <http://www.oxfordmusiconline.com/subscriber/article/opr/t237/e10456> (accessed June 22, 2014).

⁷ For a detailed look at the prevalence of this progression in contemporary pop music, refer to: Dave Carlton, "I analyzed the chords of 1300 popular songs for patterns. This is what I found," <http://www.hooktheory.com/blog/i-analyzed-the-chords-of-1300-popular-songs-for-patterns-this-is-what-i-found>.

with friend and colleague Luke Nickel, he observed that it was "like a set tightropes." The word "tightropes" stood out as a fitting title for the piece as it served not only to describe the character of the music, but also as a literary *trope* in its own right (a *polyseme*: tight - ropes / tight - tropes).⁸

Extrapolating on these concepts, I applied them to formal constructs as well. I settled on *trope as interpolation* and sought to build a small set of musical ideas used in alternation. I then subjected them to processes of repetition and interpolation generating nested structures at both the small and large scale resulting in a rondo-like form. As the sketching process continued, I explored *trope* as a metaphorical device to create musical characterizations of a tightrope itself and also that of a tightrope walker. In order to achieve this, I composed musical sketches that were *precarious* in nature, that is, music that leaves the listener in a constant state of suspense and restlessness. These sketches were energetic and brusque in character, and in order to sustain this level of energy I resolved to exploit deceptive musical timing as a means of keeping the listener guessing: employing abrupt changes between gestures; not lingering on one idea for too long, or conversely, lingering for much longer than would generally be expected; avoiding slow or quiet sections; plotting a non-linear but constant acceleration of harmonic rhythm at various time fields and writing in a highly virtuosic style for all instruments in order to symbolize the physical demands placed upon a tightrope walker.

⁸ Merriam-webster.com, s.v. "polysemous — having multiple meanings," <http://www.merriam-webster.com/dictionary/polysemy> (accessed June 22, 2014).

Chapter 2 – Tropes & Tropism: Towards an Interrelated System of Pitch and Rhythm

As mentioned in the previous chapter, I devised a system of weighted pitches with corresponding scales derived from the diatonic system as a point of departure. Drawing inspiration from the phenomenon of *tropism*, I designed a rhythmic profile for the scale where the pitches farthest from the weighted pitch have the broadest rhythmic values and those closest, the shortest. The weighted pitch itself is neutral.

2.1 Weighted Pitch and Corresponding Scale with Rhythmic Profile

To begin, I selected the pitch A₄ and designated it as "weighted pitch." Then, following the conventions of diatonicism, I filled out the scale both above and below the weighted pitch, stopping just prior to the octave (Fig. 1).

Following this, I applied the previously mentioned rhythmic profile to the scale. In order to emphasize the directional tendencies toward the weighted pitch between the upper and lower diatonic collections, I utilized the major scale as a model for the "ascending" lower collection and the natural minor for the upper tetrachord of the "descending" upper collection (Fig. 2).⁹ This has the added effect of colouring melodic phrases by brightening the lower diatonic collection and darkening the upper collection.

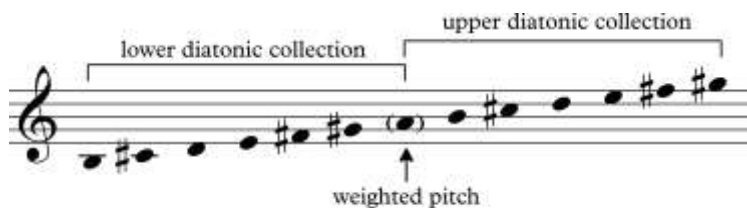


Fig. 1 - Weighted pitch and diatonic collection

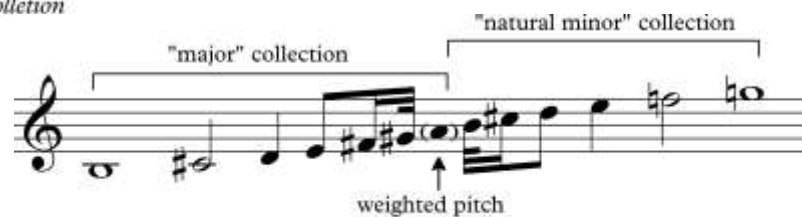


Fig. 2 - Rhythmic profile with highlighted directional tendencies

⁹ Note that the strict rhythmic values shown in Fig. 2 are only to aid in comprehension. In practice, these values are somewhat flexible to allow for musical nuances and to avoid monotony.

2.2 Proliferation / Self-Generation of Scales

Assigning the pitches from the outer extremes of the scale (B_3 and G_5) as common tone pivots generates two transposed versions of the scale with their own weighted pitches. By stringing them all together linearly, the result is a large multi-octave scale with a musical character corresponding to waves of increasing and decreasing tension. In *Tightropes* this scale is used both in its linear multi-octave form, or broken into its three components as *Scale Set A* (Fig. 3.1).

In terms of its metaphorical character, *Scale Set A* is treated as *baseline* rope tension. In order to provide alternative sets corresponding to *slack* and *taut* rope tension, I utilized the common tone pivot technique to generate *Scale Sets B* and *C* (Fig. 3.2), the former using a larger intervallic structure (slack) and the latter, smaller (taut).

2.3 Microtonal Inflections

Quarter tones are occasionally used to further highlight the directional tendencies of the scale sets as well as to increase the perceived roughness of the musical character. These inflections are employed relatively sparingly, highlighting key moments in the musical unfolding and are only used where their presence enhances the character and dynamism of a given musical object. The resultant effect is a rugged musical unravelling with an increased energetic drive and a curious disposition.

Scale A¹ Scale A² Scale A³ Scale A⁴

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

Fig. 3.1 - Scale Set A

Scale Set B (slack) Scale Set C (taut)

Scale B¹ Scale B² Scale B³ Scale B⁴ Scale C¹ Scale C² Scale C³ Scale C⁴

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot ↑ weighted pitch ↑ c-t pivot

Fig. 3.2 - Scale Sets B and C

2.4 Harmonic Proliferation

With the introduction of the I – V – vi – IV progression in implied bass lines, the collection of scales described in section 2.3 becomes transposed to whichever implied bass note is present thus expanding the tonal palette. Borrowing from the method of brightening and darkening the scale discussed in section 2.1, chromatic substitutions to the harmonic progression along with deceptive motion create surprising deviations from the listener's expectations and eventually expand the tonal palette to the point of chromatic saturation. For example, drawing from the natural minor yields a progression such as I – V – \flat VI – \flat IV, etc. Similarly, a deceptive harmonic pivot might yield a progression such as I – V – vi(/i) – V, etc. Utilizing both techniques either simultaneously or in succession enables the harmonic progression to wander indefinitely and in unexpected directions (Fig. 4).

The figure shows a bass clef staff with a sequence of notes: C, G, F, E, D, C, B, A, G, F, E, D, C. Below the staff, a harmonic progression is shown: I, V, \flat VI, I, V, vi, V, \flat VI, IV, I, V, v, i, \flat V, etc. Arrows indicate connections between these chords: an upward arrow from V to \flat VI, a downward arrow from \flat VI to IV, a rightward arrow from IV to I, and a downward arrow from I to v. A box encloses the \flat VI and I chords, and another box encloses the v and vi chords.

Fig. 4 - Harmonic Proliferation

2.5 Harmonic Progression and Predictability

The I – V – vi – IV progression is cyclical in nature and therefore generates a certain degree of expectation from the listener. Due to its familiarity among contemporary Western audiences, the ability to unconsciously predict the harmonic direction manifests the instant the progression is recognized. A similar effect occurs with diatonic scalar passages as the listener is able to predict the succession of pitches due to its commonality across many types of Western music. The techniques discussed in this chapter describe my experiments to present musical objects, or *character moments*, which present vestiges of these commonplace idioms manipulated in ways that toy with expectation and predictability. With these systems in place, I embarked on building a web of distinctive character moments arranged in a manner that destabilizes the predictability of large-scale formal structures within a familiar framework.

Chapter 3 – A Web of "Moments Musicaux"

The web of distinctive character moments in *Tightropes* is divided into two main sections: the first section shuffles through four of them, each reappearing in different guises, similar to a rondo; the second consists of an extended chain of unique character moments with each successive moment following a general trend of contracting duration. The following is a list of examples for each character moment with the location of its first (or only) appearance in the score along with a brief description of its musical character.

3.1 – The Moments of Section I: Four Moments of distinct character

♩ = c.116 - 126
TUTTI
fff

The image shows a musical score for measures 116-126. It features a grand staff with treble and bass clefs. The music is marked 'TUTTI' and 'fff'. The key signature has one sharp (F#) and the time signature is 4/4. The score includes various rhythmic patterns, including eighth and sixteenth notes, and rests. There are dynamic markings like 'v' and 'f'. A bracket indicates an 8-measure phrase, and a '3' indicates a triplet. The piece ends with 'etc.'.

Moment A – *Declamatory ascending scalar passages* (m. 1)

Several cycles through *Scale Set A* with emphasis on rhythmic profiles generating a strong sense of forward motion. Multiple doublings across many octaves in all instruments: "orchestral" style.

♩ = c.116 - 126
22
Picc. + Vln.
fff
Mar. + Pno.

The image shows a musical score for measures 116-126, starting at measure 22. It features a grand staff with treble and bass clefs. The music is marked 'Picc. + Vln.' and 'Mar. + Pno.' with a 'fff' dynamic. The key signature has one sharp (F#) and the time signature is 4/4. The score includes various rhythmic patterns, including eighth and sixteenth notes, and rests. There are dynamic markings like 'v' and 'f'. The piece ends with 'etc.'.

Moment B – *Plateau, Screaming* (m. 22)

A funnelling of energy from *Scale Set A* onto pitches E₆ and E₇. This heightened level of energy is highlighted by percussive repeated notes in mallets and piano mimicking the beating caused by neighbouring quarter tones in high winds and strings.

♩ = c.116 - 126

30 Vln. Cl. p tr fff

pp f pp fff

Vcl. tr Vln. tr pp fff etc.

pp fff pp pp

Moment C – Buzzing suspension (m. 30)

Energetic trills centered around pitch-class E with quasi periodic dispersals of energy in the form of rapid scales followed by a re-funnelling of energy onto other pitch classes as determined by the I – V – vi – IV harmonic progression (pitch classes B, C-sharp and A).

♩ = c. 96

58 f Vib. + Pno.

etc.

Moment D – Aggressive syncopated figures (m. 58)

Accented syncopated figures outlining the scale sets in contrary motion diverging from the weighted pitch (beginning with A₄). Following the introduction of these rhythmic cells, their combination and juxtaposition develop this character moment into the form of a manic dance.

3.2 – The Moments of Section II: Moments on a Tightrope

♩ = 126
TUTTI

167

fff

p

mf

gliss.

ff

pp etc.

Moment E – Line tension + precarious stumbling (m. 167)

Suspension of a pitch over a relatively lengthy period with slides and neighbouring quarter tones abruptly cut off by a dissonant, descending chromatic figure. This sequence is then repeated in various guises.

♩ = 126 molto accel. Subito ♩ = 112

TUTTI TUTTI

225

pp

Perc.

f

p

ff

mf etc.

Moment F – Balancing struggle + startling interruptions (m. 225)

Chromatic falling figures interrupted by percussion and piano. The duration of the figures varies considerably, and the percussive interruptions gradually become incorporated into the falling figures.

♩ = 112

Tam-tam

267

fff

Pno.

3

3

3

3

etc.

Moment G – Maddening repetition + spectral saturation (m. 267)

Insistently repeated E-flats in the low piano register in syncopation with complementary attacks in the tam-tam providing a wash of noise throughout the higher spectra.

♩ = 112
Winds + Strings

273

ppp *ff*

Moment H – *Mysterious sustained chord* (m. 273)

Emerging from the spectral saturation in the previous character moment, a soft sustained chord in high registers gradually increases in volume leading to the next character moment.

♩ = c.116 - 126

TUTTI

277

ff etc.

♩ = c.116 - 126

TUTTI

282

fff etc.

Moment I – *Manic galloping / time dilation effect* (mm. 277 / 282)

Energetic, angular galloping figure subjected to sudden shifts in tempo.

♩ = c.116 - 126

309 Cl. *p* < *mf* — *pp* *ff* *p* *ff* *mf* *f* etc.

Vcl. *fff* — *pp* — *mf* — *pp*

Vcl. + Pno. *p* *ff* *mf* *f* etc.

TUTTI

Moment J – Scintillating flourishes (m. 309)

Brightly orchestrated flourishes of varying lengths in increasingly dense pitch clusters.

♩ = c.116 - 126

332 Vln. *ppp* *mf* *ppp* *mf* *ppp* *mf* *p* *f* — *mp* etc.

Vcl. *ppp* *mf* *ppp* *mf* *ppp* *mf* *p* *f* — *mp* etc.

Moment K – Suspended chords + unnerving interruptions (m. 332)

Soft sustained chords, brightly orchestrated which are periodically interrupted by louder dissonant chords in lower registers.

♩ = c.116 - 126

345 TUTTI Fl. *gliss.* *gliss.* *gliss.* *gliss.* *gliss.* *gliss.* *gliss.* *gliss.* etc.

Cl. *pp* *pp* *pp* *pp* *pp* *pp* *pp* *pp* etc.

Vln. *pp* *pp* *pp* *pp* *pp* *pp* *pp* *pp* etc.

Vcl. *ff* *pp* *pp* *pp* *pp* *pp* *pp* *pp* etc.

Moment L – Weeping glissandi (m. 345)

Descending glissandi in winds and strings creating a weeping effect.

♩ = c.116 - 126

353 pizz. (Winds)

Vln. + Vlc. + Pno.
fff pizz.

Moment M – *Snapping strings* (m. 353)

Pizzicato techniques in strings and piano in complex polyrhythms outlining a chromatic variant of the I – V – vi – IV harmonic progression.

♩ = c.116 - 126 (♩ = c. 88)

356 TUTTI

gliss. f fff f fff f etc.

Moment N – *Tippled march* (m.356)

March-like music with agogic accents and displaced "downbeats" contributing to an impression of limping or stumbling.

♩ = c.116 - 126

362 Vln.

gliss. fff f feroce etc.

Moment O – *Manic violin cadenza* (m. 362)

♩ = c.116 - 126

363

8^{va}

TUTTI

fff

3

3

Moment M' (Reprise) – Explosive outburst (m. 363)

Variation of the *snapping strings* moment now in *tutti* and across a wide pitch spectrum.

♩ = c.116 - 126

364

Strings.

pp

B. Cl.

p

ff

ff

Moment P – "Ray of light" trope (m. 364)

A warmly orchestrated F major chord in open position.

♩ = c.116 - 126

365

Picc.

mf

Str. + B. Cl.

ff

pp

ff

Moment Q – "Mythical flute" trope (m. 365)

Virtuosic flute figure over sustained colourful harmony. Drawn from examples such as Ravel, *Daphnis et Chloé* or Debussy, *Prélude à l'après-midi d'un faune*.

♩ = c.116 - 126

366 TUTTI

fff pp (ff)

B. Cl. + Pno.

f # 3 5

Moment R – "Winding clarinet" trope (m. 366)

Chromatic turns within arpeggiations in the clarinet, drawn from examples such as Prokofiev, *Peter and the Wolf*.

♩ = c.116 - 126

367 TUTTI

ff (pp) etc.

Prepared Cymbal

p f gliss. gliss.

Moment S – Splat + ghostly reverberation (m. 367)

Percussive attack on pitch-class D followed by extension of the natural reverberation through glissandi on a prepared cymbal.

♩ = c.116 - 126

368

ppp mp f etc.

TUTTI

3 3 3 5

Moment T – Acceleration of time (m. 368)

The acceleration of the harmonic progression into a perceivable time field complemented by scalar passages recalling the music from Section I.

♩ = c.116 - 126

375
TUTTI
fff
etc.

Moment U – Distorted jazz-like figures (m. 375)

Syncopated melodic figures (coloured with parallel harmony) derived from the I – V – vi – IV harmonic progression. As the moment progresses, there is a gradual acceleration and eventual release of tension.

This catalogue reveals the extent of distinct motivic constructs composed — particularly in Section II — to apply the techniques of generating musical objects described in Chapter 2 as a novel approach to building musical form. The following chapters will explore in detail the cognitive processes that led to these structural experiments, their technical applications and their intended effect on a listener's perception of temporal unfolding.

Chapter 4 – Proliferation (Tropes & Tropism as a Formal Approach)

The two main sections of *Tightropes* exploit both the scalar structures with weighted pitches as well as the I – V – vi – IV harmonic progression, but their roles in the musical foreground and background are swapped in each section. The first section places emphasis on the rhythmic profiles of the scalar structures with allusions to the harmonic progression appearing in the background. Section II is constructed in an extended sequence with each character moment built using a pitch from the harmonic progression as a tonal center while treating the rhythmic profiles from the scale sets more loosely. As musical metaphors, the scale sets highlight the mechanisms behind *tropism* with their weighted pitches acting as stimuli attracting the other pitches of the scales towards them. Conversely, the harmonic progression is more closely associated with *trope* in that it is commonplace and overused. The roles of this dichotomy, however, are reversed as applied to form: the rondo-like structure of Section I shares associations with *trope* in its emphasis on interpolation as it cycles through iterations of four distinct character moments. In Section II, the formal structure correlates with *tropism* as the succession of unique and contracting character moments gradually accelerate the harmonic rhythm thus drawing out the progression from an imperceptible structural role to the musical foreground. This general formal structure is summarized in the diagram below (Fig. 5).

Section I – mm. 1 - 165 <i>Moments in different guises / Scale Sets / Tropes</i> Duration: c. 6:00	Section II – mm. 167 - 439 <i>Contracting character moments / Harmonic acceleration / Tropism</i> – Duration: c. 6:00
---	---

Fig. 5 – General overview of form in "*Tightropes*"

4.1 Section I – Tropes as Formal Approach

The first main section of *Tightropes* is itself divided into two main parts and each of these is subdivided into four sections. The first part (mm. 1-97) presents four character moments (A – D in succession, each highlighting an aspect of the scale set system. The

first character moment highlights the rhythmic profiles of *Scale Set A* along with the common tone pivot technique in a grandiose manner (*tutti*, in unison or octave transpositions) while gathering large amounts of potential energy. Character Moment B channels this energy onto a single pitch at the outer reaches of the scale. The third then explores the inner cores of the scales by utilizing rapid alternations between the weighted pitches and those closest to them (trills). These energetic channels periodically disperse and re-converge on different weighted pitches as determined by the I – V – vi – IV harmonic progression.

Character Moment D is anomalous compared to the preceding in that it is interrupted several times by interpolations from the previous character moments. Furthermore, it marks the first transition away from *Scale Set A* towards an exploration of *Scale Set B* and a comparatively lenient treatment of the rhythmic profiles. In the manner of a manic dance, it highlights the unusual turns of harmony accomplished by the use of contrary motion with the weighted pitches acting as points of divergence or convergence depending on the direction. Closer to the weighted pitches the resultant harmony resembles familiar triadic structures, whereas as the scales diverge in their outer extremes, the brightening and darkening of the scale technique (discussed in Section 2.1) yields a more uncanny harmonic language (Fig. 6).

The image shows a musical score for two staves, likely piano and vibraphone. The tempo is marked as ♩ = c. 96. The score begins at measure 58. The first section, labeled 'Familiar triadic harmony', consists of measures 58-65. It features a rhythmic pattern of eighth notes with triplet markings (3) and a dynamic marking of *f* Vib. + Pno. The second section, labeled 'Uncanny harmonic shifts', begins at measure 66 and continues to the end of the excerpt. This section features more complex harmonic structures, including chromatic lines and dissonant intervals, with triplet markings (3) and a 'etc.' at the end.

Fig. 6 – Unusual turns of harmony in "Character Moment D"

The interpolations from the preceding character moments are brief and serve as catalysts for Moment D to bound off in new harmonic and rhythmic directions. For example, the first interpolation by Character Moment C on the fourth beat of m. 66 follows a shift from *Scale Set A* to *Scale Set B*. It also signals the shift from D as weighted pitch to F at m. 67. A similar effect happens at m. 93 when another

interpolation of Character Moment C signals a shift from *Scale A¹* (F as weighted pitch) to *Scale A³* (D-flat as weighted pitch).

The lengthier interpolation of Character Moment B at measure 74 produces more significant developments to Character Moment D: a new rhythmic layer is introduced, there is a shift from *Scale Set A* to *Scale Set B* and there is the introduction of sustained harmony (Fig. 7).

The lengthiest and most dramatic of these interpolations is of Character Moment A at m. 84. Here, the pitches converge on a set of Ds, spanning four octaves and the process is inverted resulting in a large descending scale on *Scale Set B* spanning the entire range of pitches available from the ensemble. The result upon the return of Character Moment D at m. 89 is a stark change of register, an orchestration towards darker timbres and a return to *Scale Set A*. Additionally, at m. 91, the superimposition of Character Moment A onto D marks the beginning of a gradual breakdown in musical structure leading to the second half of Section I at m. 96.

4.1a The Development of Section I

The second half of Section I is dominated by the systematic development of the four character moments through the superimposition of elements across character moments paired with a build-up and release of kinetic energy.

It begins with a reiteration of Character Moment C borrowing elements from Moment A. In its first appearance at measure 29, Character Moment C remained static on its assigned pitch with the exception of the disbursement and convergence on new pitches governed by the harmonic progression. In its reiteration at measure 97, it borrows from Character Moment A a descending scalar profile (*Scale B³*) with rhythmic acceleration resulting in a dreamy, kaleidoscopic effect. Likewise, the reiteration of Character Moment A, which follows at mm. 110, borrows from the original statement of Moment C as it is orchestrated as a set of solo scales in canon, each governed by a weighted pitch derived from an extended sequence based on the I – V – vi – IV harmonic progression. Here, the kaleidoscopic effect is intensified as the scales pile up on top of one another and as they "tighten" along a progression through each of the scale sets concluding on

Scale Set C (taut). The Intensity builds until a brief plateau on an interpolation of Character Moment B acting as a transition to Character Moment D' (mm. 131 – 132).

$\text{♩} = \text{c. } 96$
Moment D
 Winds + Str.

Moment B (interpolation)

Moment D (resumption)

harmonic sustain

new rhythmic layer

etc.

Fig. 7 – Interpolation of Character Moment B within Character Moment D

This development is marked by alternating statements of ascending and descending scales systematically wavering between the two rhythmic layers (triplet eighth notes and straight eighth notes). It borrows from Moment A in that the contrary motion is gradually replaced by parallel motion as the energy builds toward a violent climax and final statement of Character Moment B at m. 150. Beginning as a frenzied piano cadenza, gradually more instruments are added until the full ensemble unleashes all its stored energy in an uncontrolled manner. This leads to a total breakdown of the musical engine at measures 150 – 165.

The processes involved in building the structure of Section I result in a form with sections that are evenly distributed and of relatively equal length (Fig. 8). The *trope-like* aspects of the interpolations serve to infect the generally conventional structure of Section I and establish a musical problem that demands resolution in Section II.

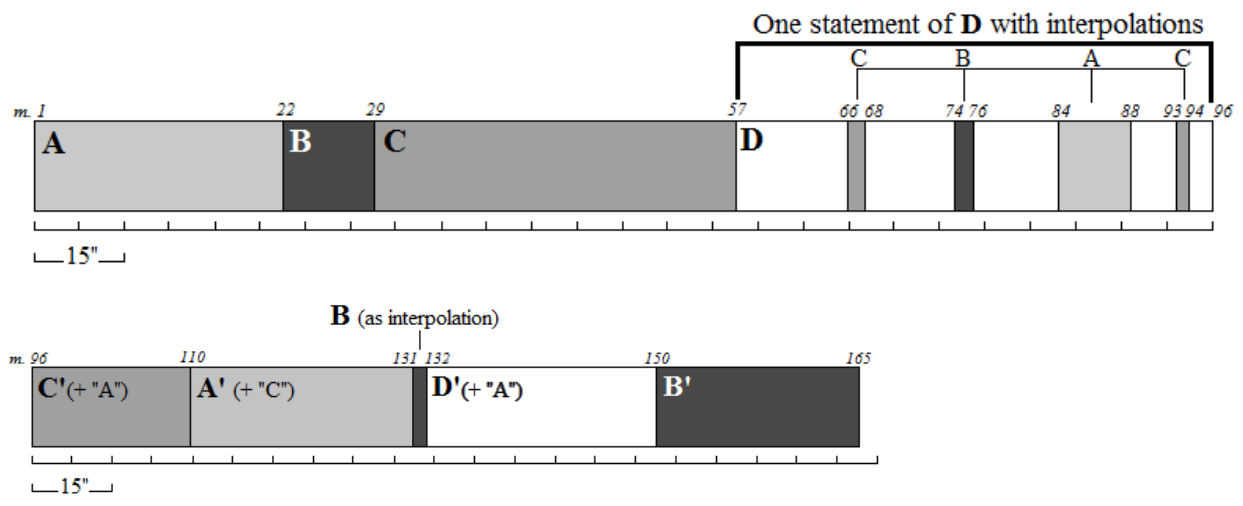


Fig. 8 – *Formal overview of Section I*

4.2 A Moment of Silence and a Solution to Form

Measure 166 is a grand pause acting as a palate-cleanser before embarking on Section II, but also as a symbol for a moment of reflection I had taken to determine how to resolve the issues of form that emerged in the composition of Section I. Considering I had envisioned composing a piece of a precarious and unpredictable nature, I recognized that should I continue to use processes of development and restatements of now familiar musical objects, I would fail to meet my objectives. I speculated through familiar musical

models that at this point in a work, a listener might expect a contrasting section followed by a dramatic restatement of the original material, or possibly a set of further variations and developments, or perhaps more rarely, a gradual dissolution of the musical elements towards an austere conclusion. After careful consideration, I resolved that the most interesting way to play around with a listener's expectation would be to fulfill their immediate expectations (i.e. compose a contrasting section) but then to tantalizingly withhold fulfilling any others (i.e. avoid any complete restatements of previously existing material). My solution then, was to compose a string of distinct character moments in a runaway chain reaction without ever lingering on past material except only to hint at them in order to further raise and then thwart expectations.

Another issue then arose as to the method of unifying this extended string of contrasting musical moments. It was here that I drew inspiration from *tropism* and settled on assigning a pitch from the harmonic progression to each character moment, accelerating the formal rhythm and, by consequence, the harmonic rhythm until the progression itself became its own character moment.

4.3 Section II – *Tropism* as Formal Approach

To accomplish the task of formal acceleration, I sketched out 15 distinct character moments in sets of five. Once a set was prepared, I expanded some character moments, truncated others and arranged them in an order that accentuated contrast and accreted kinetic energy. I continued this process, accelerating the rate of change between character moments until harmonic rhythm until reached the level of a whole note. Once this was achieved, I composed a character moment dedicated solely to the acceleration of the harmonic rhythm from the whole note to triplet eighth notes (Character Moment T), and a final character moment (U), utilizing the harmonic progression in three distinct time fields (Fig. 9).

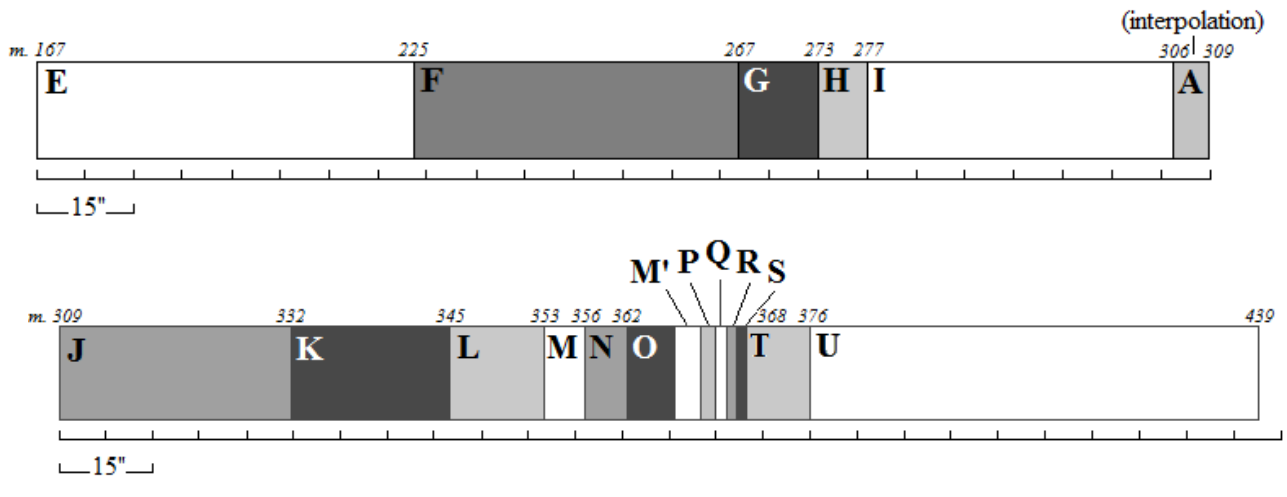


Fig. 9 – *Formal overview of Section II*

As can be seen from the formal diagram above, there are only two occurrences of musical restatements and both are very brief. The first is an interpolation of Character Moment A at m. 306 which serves to create the expectation that there might be a return to the original musical themes as well as acting as the catalyst for the acceleration of the harmonic rhythm into a perceptual time field (which begins at J). The second is an explosive restatement of Character Moment M at m. 363 which is both surprising and marks the beginning of a set of character moments which are only one bar in length.

Apart from these two deviations, the increasing rate of change between character moments is readily apparent in the visual representation above. It is limited, however, in revealing the rate of harmonic change once the harmonic rhythm has transferred over from the structural background role into the musical foreground (Character Moment T). In order to better understand this transference, the relationship between meta-processes across multiple time fields must be examined.

Chapter 5 – Trope as Metonymy: Time Fields & Form

5.1 Metonymy: A Path to Temporal Perception

Metonymy is defined as "a figure of speech consisting of the use of the name of one thing for that of another of which it is an attribute or with which it is associated."¹⁰ In terms of its metaphorical applications to the music in *Tightropes*, the processes resulting from the scale systems and the harmonic progression occur simultaneously across multiple time fields. Specifically, these systems are synchronously generating the musical objects, the musical phrases, the character moments, their grouping into larger collections (i.e. Sections I & II) and the global form. Concurrently, the roles of the scale sets and the harmonic progression gradually shift from foreground to background and vice versa. This culminates in the final character moment where the harmonic progression forms the melodic attributes of the character moment while the *Scale Set A* builds the (parallel) harmony. Furthermore, as this character moment develops (beginning at m. 387), the harmonic progression begins occurring across multiple time fields: eighth notes, bars, musical phrases and, at its close, completes the full harmonic cycle spanning the entire piece. Therefore, the associations between the scale sets and the harmonic progression transition from these systems being separate entities fulfilling complementary roles, to interrelated systems fulfilling their original roles as well as the role of the other's: they become *metonymous*.

5.2 Scale Sets *vis-à-vis* Harmonic Progression: Their Roles in Section I

As explained in Chapter 4, the character moments in Section I are predominantly scalar in nature, drawing musical interest from the rhythmic profiles, uncanny harmonic turns through the exploitation of the outer extremes of the scales and through the common tone pivot system as a means of enabling a proliferation of the harmony to new pitch-fields. The harmonic foundation for this section, however, is derived from the

¹⁰ Merriam-webster.com, s.v. "metonymy," <http://www.merriam-webster.com/dictionary/metonymy> (accessed July 18, 2014).

I – V – vi – IV harmonic progression. Fundamentally, the entire section is built upon an extended prolongation of the pitch class A. The harmonic motion occurs simultaneously across three time fields. The deepest time field (Time Field 3) prolongs A via an extended sequence derived from the harmonic progression at an approximate rate of one change in harmony per character moment iteration. A middle-ground time field (Time Field 2) highlights this progression at a temporal rate straddling the fringes of perception and the fastest, surface time field (Time Field 1) draws its harmonic motion from the scale sets as they flow through one another via the common tone pivot technique or as they shift between Sets *A*, *B* or *C*. While the deeper time fields may not be readily perceived by listeners, in setting up the harmonic motion that governs Section II, they play a fundamental role in the structure of *Tightropes* as a whole (Fig. 10).

Character Moment: A B C D — B A C —> C' A' — B —> D' B'

Time Field 3 – A: I
 Time Field 2 – A: I
 Time Field 1 – E: V I V VI IV F: VI I V IV VI E \flat : IV V — (dbl. nt.) VI D: I V VI B: I V (\flat VI)

Fig. 10 – Harmonic reduction of Time Fields 1, 2 and 3 in Section I

Note at the end how the expected motion to G or G-sharp at the return of Character Moment B is evaded in favour of returning to pitch class A. This leaves the cycle incomplete, an issue that is resolved in the more elaborate harmonic sequence in Section II.

5.3 Harmonic Progression vis-à-vis Scale Sets: Their Roles in Section II

Section II marks a turn away from the predominance of the scale sets towards a more homophonic and textural approach to composition. Moreover, the orchestration, while retaining an "inflated" orchestral style veers away from reinforced monodic lines (one or two voices with multiple octave doublings) toward stratified layers, solos, duets and compound instrumental timbres: a harmonic approach. The role of the scale sets in

Section II is to provide a source of pitches from which to build musical objects, much like diatonic scales in traditional tonal music.

Regarding the harmonic progression, Section II begins with a polarity on pitch class A and cycles through an extended sequence of pitches completing one full cycle and several abbreviated cycles by its conclusion. The full cycle is completed at the reprise of Character Moment M (m. 363) and marks the transition to character moments that are one bar in duration. The remaining cycles are abbreviated to allow for greater perception of the progression and to heighten the sense of propulsion as the music draws toward its final climax (Fig. 11.1).

Character Moment: E F G H I J K L M N O P Q R S-T U

Time Field 3 – A: I

Time Field 2 – D: V $\begin{matrix} \text{VI} \\ \text{I} \end{matrix}$ C: $\begin{matrix} \text{IV} \\ \text{bIV} \end{matrix}$ $\begin{matrix} \text{IV} \\ \text{bV} \end{matrix}$ I — $\begin{matrix} \text{V} \\ \text{I-b} \end{matrix}$ V — $\begin{matrix} \text{VI} \\ \text{VI} \end{matrix}$ Eb: $\begin{matrix} \text{I} \\ \text{VI} \end{matrix}$ V — $\begin{matrix} \text{VI} \\ \text{VI} \end{matrix}$ Bb: $\begin{matrix} \text{V} \\ \text{IV} \end{matrix}$ C: $\begin{matrix} \text{I} \\ \text{V} \end{matrix}$ $\begin{matrix} \text{VI} \\ \text{IV} \end{matrix}$ F#: $\begin{matrix} \text{bVI} \\ \text{I} \end{matrix}$ D: $\begin{matrix} \text{I} \\ \text{V} \end{matrix}$ $\begin{matrix} \text{VI} \\ \text{bVI} \end{matrix}$ V $\begin{matrix} \text{I} \\ \text{VI} \end{matrix}$

Fig. 11.1 – *Harmonic reduction of Time Fields 2 and 3 in Section II*

Note how at the transition between Character Moment J and K a chromatic shift from G to G-flat along with a harmonic pivot avoids the expected motion to pitch class A in order to delay its arrival until the completion of the harmonic cycle at M'.

In Character Moments I, K and M there are accelerated sequences of harmony (notated as small black note heads in Fig. 11.1) that foreshadow the runaway chain reaction that begins at Character Moment T (Fig. 11.2).

Character Moment: I m. 277 K 332 5-6 M 353 T 368 5-6

Time Field 2 – C: I — Gb: V — Eb: $\begin{matrix} \text{V} \\ \text{I} \end{matrix}$ — $\begin{matrix} \text{VI} \\ \text{V} \end{matrix}$ — $\begin{matrix} \text{IV} \\ \text{bVI} \end{matrix}$ — $\begin{matrix} \text{I} \\ \text{VI} \end{matrix}$ — V — Eb: $\begin{matrix} \text{V} \\ \text{VI} \end{matrix}$ — Bb: $\begin{matrix} \text{I} \\ \text{V} \end{matrix}$ $\begin{matrix} \text{VI} \\ \text{bVI} \end{matrix}$ $\begin{matrix} \text{IV} \\ \text{IV} \end{matrix}$ F#: $\begin{matrix} \text{bVI} \\ \text{I} \end{matrix}$ D: $\begin{matrix} \text{I} \\ \text{V} \end{matrix}$ $\begin{matrix} \text{VI} \\ \text{bVI} \end{matrix}$ 5-6, 5-6...

Fig. 11.2 – *Harmonic motion in Time Fields 1 and 2 in Character Moments I, K, M and T*

In Character Moment T, the model – sequence chain reaction is repeated twice with subtle chromatic alterations. The model itself is a semitone highlighting the V to \flat IV chromatic substitution, however the remaining sequences are all whole tones. In terms of the predominant polarity (D), a G natural would be expected in the second sequence, but a G-sharp is used in its place. In the antepenultimate sequence, the C-natural is then replaced by the previously expected C-sharp. These evaded resolutions coupled with the harmonic acceleration propel the music forward until the G-natural is finally attained, signifying the beginning of the final character moment.

5.4 The Convergence of Time Fields

Character Moment U (m. 375) is both a summation of and conclusion to the processes which led to its creation. Here, the time fields converge and refract upon one another producing a multi-layered musical theme that is fractal in nature. At the deepest (largest) scale, it marks the conclusion of a twelve-minute long harmonic prolongation; the next level up, it is the completion of a set of harmonic cycles across large-scale formal structures; farther up, it is the character moment itself; another level up, it is a set of musical phrases outlining the harmonic cycle which are, in turn, composed of a one-bar melody that *is also* an extended harmonic cycle (Fig. 12). The parallel harmony drawn from *Scale Set A* symbolizes the refractory nature of this culmination of musical processes.

375 387 395 401 405 412 428 439

Time Field 3 – (A: I) — (V VI) — (V) I

Time Field 2 – G: I — (I) A: V I

Time Field 1 – G: I — V VI IV I V VI IV I V VII IV (I—V VII IV)

Time Field 0 – G: I #V VI IV
 F: V #VI V
 Db: I V

G: I V VI 5-6,1 A: V I

5 - 6 seq. seq. seq.

Fig. 12 – *Harmonic reduction of Character Moment U across all time fields*

Time Field 0 represents a rate of change of less than 1 second, which in this case of Character Moment U, is a rate that is equivalent to less than two quarter notes. Time Field 1 represents larger musical phrases, Time Field 2, the time determined by the length of the character moment itself and finally, Time Field 3, the background prolongation of pitch class A throughout the duration of *Tightropes*. Beginning at m. 428, the return to pitch class A is achieved not through direct harmonic motion, but rather through the dissolution of the polarity on G in an extended 5-6 sequence in *accelerando*.

Chapter 6 – Expectation: Timing and Perception

6.1 Music and Time – A Subjective Experience

The experience of a piece of music is unique for each individual. It is dependent on factors such as exposure to culture, and by extension, instruments, musical genre, style, previous exposure to a piece, the work of a particular composer or artist and even the individual's capacity for cognition and memory.

Infants quickly develop musical preferences toward culturally familiar traditions and, later in life, it has been observed that an individual's capacity for musical memory is much greater towards music that is culturally familiar than music that is culturally unfamiliar.^{11 12}

The *tropes* that form the basis of the music materials used in *Tightropes* are therefore only familiar to audiences that are exposed to the Western musical culture from which they are drawn. The musical games that unfold with these *tropes* and their intended effect on perception, expectation and surprise are likewise a deeply subjective experience dependent on a listener's familiarity with the musical sources from which *Tightropes* is built, Western Classical forms, and even the instrumental ensemble for which it was written.

What *is* surprising in music? Neuroimaging has revealed that the human brain processes musical structure in the same areas of the brain that process language.¹³ This suggests that language and music alike are experienced in the mind through similar cognitive processes.¹⁴ Like language, music possesses rules of grammar and syntax, and when these rules are broken with circumspection, an observer familiar with the musical syntax is able to implicitly infer the expected inclination of a musical structure and become engaged in the syntactical diversions as they unfold.

¹¹ Gaye Soley and Erin E. Hannon, "Infants Prefer the Musical Meter of their Own Culture: A Cross-Cultural Comparison," *Developmental Psychology* 46:1 (January 2010): 286-92.

¹² Steven Demorest, Steven Morrison, Münir Beken and Denise Jungbluth, "Lost in Translation: An Enculturation Effect in Music Memory Performance," *Music Perception* 25:3 (February 2008):213-23.

¹³ Daniel Levitin, "Musical Structure is Processed in 'Language' areas of the brain: A Possible Role for Brodmann Area 47 in Temporal Coherence," *NeuroImage* 20:4 (December 2003): 2142-52.

¹⁴ Ibid.

This cognitive process happens at the same rate as the musical unfolding and is dependent not only on a listener's cultural awareness of the musical language, but as well their capacity for storing and recalling musical information over short and long temporal distances (i.e. their memory). As a piece of music unfolds, a listener receives a continuous stream of sensory stimuli which are retained over short temporal distances and, with this combined information, anticipates the imminent musical progress (Fig. 13).¹⁵

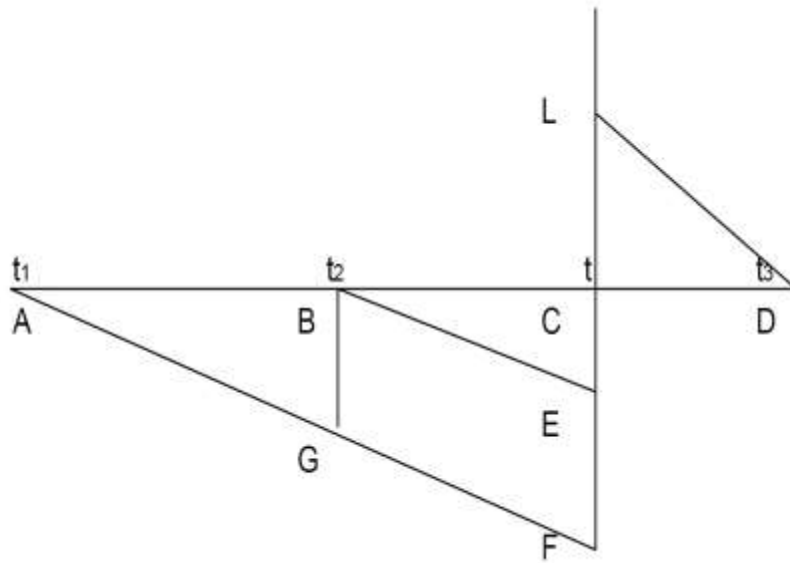


Fig. 13 – *The cognitive experience of music as heard*

This graph can be explained as follows: the intersection of the vertical and horizontal lines at t represent the musical impulses as they are perceived by the listener in real time — their *primal-impressions*. The horizontal line AD represents both a given time interval and the continuous stream of primal-impressions through time, with t_2 representing the most recent primal-impression and t_1 the preceding primal-impression in sequence. t_3 is the representation of the imminent musical impulses. The diagonal lines AF and BE represent sequences of *retentions* formed by the listener at t_1 and t_2 respectively. These are the temporary storage of the primal-impressions formed by a listener following their occurrence. The sequence of retentions represented by AF (not

¹⁵ Itzhak Miller, *Husserl, Perception and Temporal Awareness*. (Cambridge, MA: The MIT Press, 1983), 122-3.

including point A) are "modifications" of the primal-impression experienced by the listener at t_1 . A second sequence of retentional "modifications" occurs along the line BE (not including point B) of the primal-impression experienced at t_2 . The vertical lines BG and CF represent a continuum of retentions from past to present with G and F being the farthest in the past and C as the present. The vertical line CL represents a continuum of *protentions* (similar to projections or anticipations) formed by the listener at t . This sequence of protentions corresponds to the sequence along CD in anticipation of D.¹⁶

The concepts of *primal-impression*: the sensory stimulus in the exact moment, *retention*: the lingering of the preceding primal-impression in the background of the mind and *protention*: the implicit consciousness of what to anticipate are important in the understanding of a listener's cognition of music as it is experienced in real time.¹⁷ In his lecture at the Brazilian Symposium for Post-Graduates in Music in 2012, Norwegian composer Lasse Thoresen summarized its importance and its implications in the construction, experience and perceptual understanding of large-scale musical form:

[W]hat we call a 'moment' is not just the primal impression; it is a horizon that extends back into the past as well as into the near future. Without this feature of the consciousness, there would be no consciousness at all. And mind you, we are not yet dealing with memory, in terms of [recollection] of the past, [since a 'moment' is] only time [at] a small scale. However, information that is not perceived in this small scale will have difficulty [...] being remembered on a larger time scale [i.e. larger musical forms].

[...]What are the aural preconditions for the larger forms? [...] Musical form is the aurally perceived organisation of lower level sound-patterns into composite entities with emergent qualities. Organic musical form extends features [of retention, primal impression and protention...] into a much larger time scale. This expansion of the mind's natural constraints necessitates specific ways of organising the musical discourse, [...] which permits larger time segments to be condensed and kept in memory so that at any moment during the unfolding of music, present musical events are appreciated in light of a simplified idea of preceding segments.

In other words, extended time segments in retrospect become condensed into a memorable 'summary'. Such a summary retains the features that give the past elements a function in relation to the element unfolding in the present. The same condensation may also imply certain expectations or uncertainties with regard to what is to happen next.¹⁸

¹⁶ Ibid.

¹⁷ Lasse Thoresen, "Sound, Pattern, and Structure: Novel Methods for Analysing Music-as-Heard," (Lecture, Anais Do II Simpom 2012 – Simpósio Brasileiro de Pós-Graduandos em Música), <http://www.seer.unirio.br/index.php/simpom/article/viewFile/2600/1928>, 9.

¹⁸ Ibid., 9-10.

Therefore, possessing a keen awareness of this perceptual model allows a composer to evaluate a spectrum of predictability along a sequence of musical moments, thus granting the composer the capacity to choose how to proceed from any given moment along the spectrum of predictability. However:

For the immediate perception of greater scale form to become a reality, the segments that constitute the form, must, to a great extent, be ‘time-collapsible’, i.e. their immediate, and more complex and manifold appearance, must be capable of being wrapped up into a simple ‘summary’ remaining in the aural memory of the listener. [...] This is] a memory that [is not simply the ‘retention,’ but] has preserved some of the properties of the retention [and] has extended this to longer temporal distances. Thus, it is [...] more like a horizon, only staying in the background of the unfolding musical experience and colouring it, and orienting our present listening.¹⁹

In composing a piece of music that manipulates a listener's sense of expectation, a composer must accordingly apply their awareness of this perceptual model across multiple temporal dimensions: from moment to moment, across small-scale structures, global form and through historical perspectives of music performance (culture).

6.2 Expectation in Section I

After the premiere of Arnold Schoenberg's *Pierrot lunaire* in 1912, the ensemble for which it was written emerged as one of the core ensembles for contemporary art music throughout the 20th Century as well as the beginning of the 21st Century. Throughout this period, many ensembles formed with this instrumentation (flute, clarinet, violin, cello and piano) and commissioned new works from composers to take advantage of this ensemble's instrumental colours.²⁰ As a result, a rich history of musical works accumulated for this ensemble, many of which are still performed today.

While in the early stages of sketching music for *Tightropes*, the knowledge that I would be composing for *Ensemble Transmission* — a *Pierrot Ensemble* with percussion — with my awareness of a body of work for this ensemble and my desire to thwart the expectations of audiences led me to approach the orchestration from a non-traditional

¹⁹ Ibid., 10.

²⁰ Noël Goodwin, "Fires of London", Grove Music Online, ed. L. Macy, <http://www.oxfordmusiconline.com/subscriber/article/grove/music/09708> (accessed July 21 2014).

perspective. Compositions for this ensemble frequently exploit the chamber-like qualities of the instrumental colours available from the ensemble. Well-known examples include the original *Pierrot lunaire* (1912), Olivier Messiaen's *Quatuor pour la fins du temps* (1940-41), Elliott Carter's *Triple Duo* (1983) as well as Gerard Grisey's *Taléa* (1986) and *Vortex Temporum* (1996).

Allowing the assumption that the majority of a concert-going audience would have some awareness of music written for the ensemble, I resolved to open the piece in a manner that would deviate from their expectations: a large orchestral sound accomplished by multiple doublings of a monophonic line across several octaves, extremes of register and a bold musical gesture in *concertante* style.

Despite this *unexpected* opening, the remainder of Section I focuses on *building* expectations. It follows a relatively linear path of increasing intensity; it cycles through four musical ideas and develops them according to Classical conventions of variation and combination, expansion and contraction, modulation and harmonization; it follows clear tonal trajectories and is divided into sections of roughly equal duration.

At a more local temporal level, I exploited the temporal consciousness model discussed above to manipulate the timing of the progression of events in order to heighten suspense. Following the *protentions* of my own *primal-impressions* of the musical discourse, I either extended or (more often) truncated musical phrases in a manner that contradicted my protentions or anticipations. The result is a distortion of the familiar (rondo-like) formal conventions: the syntax is disturbed. The cycling through four distinct musical "themes" is familiar, as is their development, but the timing of musical progression is off-kilter creating a certain uneasiness. This manifests more concretely with the interpolations scattered across Character Moment D (m. 58). The listener's protentions anticipate that this musical shift is the arrival of a new formal section, but their truncation and the subsequent resumption of Character Moment D forces the listener to constantly re-evaluate their protentions. Additionally, the varying lengths of the interpolations generate even more surprise. For example, the interpolation of Character Moment A at m. 84 follows this course of thought: that m. 84 marks the arrival of an interpolation of Character Moment A, an assessment based on the earlier *brief* interpolation of Character Moment B and thus the expectation that this will be a brief

interpolation as well. As Character Moment A continues past the expected duration, there is a reassessment that this is a full statement of Character Moment A but, finally, as it accelerates into the resumption of Character Moment D at m. 89, there is one last reassessment that confirms that this was indeed an interruption and *not* a full statement (Fig. 14).

These interpolations implicitly prepare the listener for the deviations from expectation at the large-scale form in the unfolding of Section II.

6.3 Deviation in Section II

According to traditional formal conventions in Classical music, following the climax of Section I, a listener might expect one of several developments as discussed in Chapter 4.2.²¹ Having resolved to set up and thwart these expectations, I once again turned to the temporal consciousness model, but now applied at a larger formal scale: when would a return to the material from Section I be anticipated?

Firstly, I speculated that the arrival of Character Moment G at m. 267 following two distinct character moments (E and F) would be the beginnings of a conscious realization that something unusual is developing from a formal perspective. An audience member would be familiar with two contrasting ideas in a piece of music, but three in succession is rather unusual. To increase this disorientation, I incorporated two further contrasting character moments before revisiting material from Section I — but only as an interpolation. It is at this point in *Tightropes* that the unexpected becomes the *expectation*.

In order to sustain the suspense and disorientation, I returned to the truncation of musical phrases, but now applied to the character moments themselves creating a runaway chain reaction of formal acceleration. It is through this process of acceleration that the underlying harmonic structure begins to emerge on a conscious level along with a perceptual understanding of the global form of the piece (compare figures 9 and 11.1).

²¹ "[A] listener might expect a contrasting section followed by a dramatic restatement of the original material, or possibly a set of further variations and developments, or perhaps more rarely, a gradual dissolution of the musical elements towards an austere conclusion."

Character Moment D **Moment C (interpolation)**

♩ = c. 96

58 *f* Vib. + Pno. *etc.*

66 *ff* *pp*

Moment D (resumption) **Moment C (interpolation)**

67 *ff* *p* *etc.*

73

Moment B (interpolation)

74 *8^{va}*

Moment D (resumption)

76 *fff* *ff* *mp sub.* *etc.*

82 *ff*

Moment A (interpolation)

83 *fff*

Moment D (resumption)

89 *fffz p* *etc.*

Moment C (interpolation) **Moment D (resumption)**

92 *p* *mp* *fff* *mf* *etc.*

ff sub.

Fig. 14 – Summary of interpolations in Character Moment D

6.4 The Perception of Global Form

The acceleration of the harmonic sequence at Character Moment T (m. 398) into Character Moment U (m. 375) intends to reveal on a conscious level the structural processes that were occurring throughout *Tightropes*. With the harmonic progression occurring simultaneously across several time fields (as shown in Fig. 12), the listener may then be able to extrapolate this information and apply it to their retentions and memory of the work's development. If successful, this then provokes an understanding of the structural unification across a string of seemingly unrelated musical ideas and consolidates these isolated moments into one grand musical entity. With this revelation, the tension and suspense are finally resolved and the piece draws to a close.

Conclusion

In seeking musical metaphors for tightropes, I discovered methods and techniques for generating music of a precarious and suspenseful nature, shifting listeners' expectations through novel approaches to multi-tiered form, pacing and development, which will have applications beyond their use in *Tightropes*. This promotes a compositional approach to form that can be applied to larger meta-structures, such as multi-movement works and large-scale theatrical works, for instance, opera.

Tightropes suggests a sustained state of heightened emotion, but also a journey through temporal dimensions unified by a flexible structural process. The flexibility of this system facilitates its expansion across multiple musical forms and genres. Moreover, the techniques for distorting commonplace idioms into an idiosyncratic language opens the door to the exploration of the manipulation of other idioms and codifying them into a unified compositional palette. *Tightropes*, in the examination and development of these musical techniques, promotes the exploration of further compositional developments.

Bibliography

- Carter, Elliott. "Triple Duo." 1983. London: Boosey & Hawkes HPS 982, 1983.
- Carlton, Dave. "I analyzed the chords of 1300 popular songs for patterns. This is what I found." <http://www.hooktheory.com/blog/i-analyzed-the-chords-of-1300-popular-songs-for-patterns-this-is-what-i-found>.
- Debussy, Claude. "Prélude à l'après-midi d'un faune." 1894. Paris: E. Fromont 1091 F, 1895.
- Demorest, Steven, Steven Morrison, Münir Beken and Denise Jungbluth. "Lost in Translation: An Enculturation Effect in Music Memory Performance." *Music Perception* 25:3 (February 2008):213-23.
- Grisey, Gérard. "Taléa." 1986. Milan: Ricordi RP00241000, 1986.
- . "Vortex Temporum." 1996. Milan: Ricordi R2714, 1996.
- Husserl, Edmund G. *On the Phenomenology of the Consciousness of Internal Time (1893-1917)*. Translated by John Barnett Brough. Dordrecht: Kluwer, 1991.
- Levitin, Daniel. "Musical Structure is Processed in 'Language' areas of the brain: A Possible Role for Brodmann Area 47 in Temporal Coherence." *NeuroImage* 20:4 (December 2003): 2142-52.
- Messiaen, Olivier. "Quatuor pour la fin du temps." 1941. Paris: Durand DF01406400, 1944.
- Miller, Itzhak. *Husserl, Perception, and Temporal Awareness*. A Bradford Book. Cambridge, MA: The MIT Press, 1984.
- Oxford Music Online*.
- "Fires of London" (by Noël Goodwin).
<http://www.oxfordmusiconline.com/subscriber/article/grove/music/09708>
(accessed July 21 2014).
- "Trope" (edited by Michael Kennedy).
<http://www.oxfordmusiconline.com/subscriber/article/opr/t237/e10456>
(accessed June 22, 2014).
- Polikarpov, G. G. "Sunflower's blooming floscule is a compass." *Nature* 272:122 (March 9, 1978): 122. <http://www.readcube.com/articles/10.1038/272122c0>
(accessed June 22, 2014).

Prokofiev, Sergei. "Peter and the Wolf." 1936. London" Boosey & Hawkes M060110764, 1936.

Ravel, Maurice. "Daphnis et Chloé." 1913. Paris: Durand D.& F. 9127, 1913.

Soley, Gaye and Erin E. Hannon. "Infants Prefer the Musical Meter of their Own Culture: A Cross-Cultural Comparison." *Developmental Psychology* 46:1 (January 2010): 286-92.

Thoresen, Lasse. "Sound, Pattern, and Structure: Novel Methods for Analysing Music-as-Heard." Lecture, Anais Do II Simpom 2012, Simpósio Brasileiro de Pós-Graduandos em Música).
<http://www.seer.unirio.br/index.php/simpom/article/viewFile/2600/1928>

———. Lectures on Aural Sonology and Perception of Form, McGill University, Montreal, Canada, Autumn 2013.