

JOHN GRESCHAK

PENTOMINOES

for flute, trumpet and cello

SECOND EDITION

Note from the Composer

A pentomino is a shape formed by connecting five equal-sized squares, each joined together with at least one other square along an edge. If rotation and reflection is allowed, there are twelve different shapes of this type. Solomon W. Golomb coined the term pentominoes in a talk to the Harvard Mathematics Club in 1953.

This piece was created by using musical material derived from the mathematical properties of pentominoes.

For additional information, visit <http://www.greschak.com> on the World Wide Web.

I hereby place this work that I have authored into the public domain and in the process abandon all copyright protection.

John Greschak
2002

Notation

The tuplet numbers 3, 5 and 6 represent the ratios 3:2, 5:4 and 6:4, respectively.

Accidentals affect only those notes which they immediately precede, with the exception of tied notes. Accidentals are never repeated on tied notes.

Articulation Symbols

- > Normal Accent (louder than prevailing dynamic)
- ^ v Strong Accent (louder than normal accent)
- . Staccato (shorter than normal)

Position of the Instruments

Cello
Flute Trumpet

Duration

8 minutes 32 seconds

PENTOMINOES

John Greschak

$\text{♩} = 80$

Flute

Trumpet in C

Cello

mf

mf

3

3 8 6 8 9 8 3

3 8 6 8 9 8 3

f

7

2 4 3 4 2 4 3 4 2 4

pp < *ff* — *pp*

2 4 3 4 2 4 3 4 2 4

11

2/4 2/4 2/4

mf

pp

16 16 16 16

15

11/16 2/4 6/8 5/8

mf

11/16 2/4 6/8 5/8

11/16 2/4 6/8 5/8

19

6/8 2/4 6/8

6/8 2/4 6/8

6/8 5:6 5:6 2/4

23

26

29

32

36

40

45

9/16

6/8

9/16

6/8

6/8

50

(mf)

f

mp

9/16

15/16

6/8

(mf)

f

mp

9/16

15/16

6/8

54

ff

mf

ff

ff

9/16

5/16

2/4

f < ff

mf

ff

9/16

5/16

2/4

58

ff

61

mf

ff

64

mf

mp

mf

68

p — *mp* — *p* — *mp* —

mp — *mf* — *mp* —

mp —

73

mf — *mp* —

mf — *f* —

mf —

mf — *f* — *mf* —

mf —

77

p —

mf — *f* — *mf* —

p — *mf* — *mp* — *mf* —

mf — *f* — *mf* —

(mp) —

f — *mf* — *(mf)* — *f* —

81

84

88

93

9/16 6/8 7:6 (mf) ff 6/4

9/16 6/8 mf 7:6 3 6 6/4

9/16 6/8 5:6 7:6 (mf) ff 6/4

Musical score for piano, page 10, measures 96-100. The score consists of three staves. The top staff uses a treble clef, the middle staff a treble clef, and the bottom staff a bass clef. Measure 96 starts with a forte dynamic. Measure 97 begins with a 5/8 time signature. Measure 98 starts with a 7/8 time signature. Measure 99 begins with a 2/4 time signature. Measure 100 ends with a 2/4 time signature.

99

3 3

mf

3

p *f* *mp*

3

3

3

3

102

p

p

mf

106

pp — *mp* — *pp*

pp — *mp* — *pp*

p

mf

110

mf

ff

115

6
3

mp

mf

5 16 5 16 5 16

119

mp *f* *mf*

p

mp *f* *mf*

124

mf

Musical score for orchestra, page 127, measures 1-4. The score consists of four staves. Measure 1: Treble clef, key signature of one sharp. Measure 2: Treble clef, key signature of one sharp. Measure 3: Treble clef, key signature of one sharp. Measure 4: Bass clef, key signature of one sharp. Measure 5: Bass clef, key signature of one sharp. Measure 6: Bass clef, key signature of one sharp. Measure 7: Bass clef, key signature of one sharp. Measure 8: Bass clef, key signature of one sharp. Measure 9: Bass clef, key signature of one sharp. Measure 10: Bass clef, key signature of one sharp. Measure 11: Bass clef, key signature of one sharp. Measure 12: Bass clef, key signature of one sharp. Measure 13: Bass clef, key signature of one sharp. Measure 14: Bass clef, key signature of one sharp. Measure 15: Bass clef, key signature of one sharp. Measure 16: Bass clef, key signature of one sharp. Measure 17: Bass clef, key signature of one sharp. Measure 18: Bass clef, key signature of one sharp. Measure 19: Bass clef, key signature of one sharp. Measure 20: Bass clef, key signature of one sharp.

Musical score for piano, page 131, measures 43-46. The score consists of three staves: treble, bass, and right hand. Measure 43 starts with a forte dynamic. Measure 44 begins with a piano dynamic. Measure 45 starts with a forte dynamic. Measure 46 ends with a piano dynamic. The score includes various note heads, stems, and rests, with some notes having accidentals like sharp, flat, or natural signs.

135

138

mp — *ff* — *p* — *mp* — *p* — *mp* — *mf*

ff

mp — *mf* — *ff*

141

mp

p — *ff* — *mp* — *mf*

p — *mp* — *mf* — *mp*

144

— $\frac{9}{16}$ — $\frac{6}{8}$ — $\frac{9}{16}$

mp

$\frac{6}{8}$ — $\frac{6}{8}$ — $\frac{9}{16}$

mf

147

151

154

157

5.6 6.5

mp *ff* *mf*

160

5 5 3

3 3

163

ff

6

ff *mf*

166

$\frac{1}{16}$

$mp \longrightarrow f$

$f < ff \longrightarrow mp$

169

ff

mf

172

p

mf

(mf)

176

ff *mp*

mf

180

185

p

mp *f* *mp*

mf

mp *f* *mp* *mf*

189

Music for three staves:

- Top Staff:** Treble clef, mostly rests.
- Middle Staff:** Soprano clef, includes a sixteenth-note pattern starting with a grace note, followed by eighth-note pairs and sixteenth-note patterns.
- Bottom Staff:** Bass clef, includes eighth-note pairs and sixteenth-note patterns.

Dynamics: **f** (middle staff), **ff** (bottom staff), **mf** (bottom staff).

192

Music for three staves:

- Top Staff:** Treble clef, includes sixteenth-note patterns.
- Middle Staff:** Soprano clef, includes sixteenth-note patterns.
- Bottom Staff:** Bass clef, includes sixteenth-note patterns.

Dynamics: **mf**, **ff**, **mf**.

195

Music for three staves:

- Top Staff:** Treble clef, includes sixteenth-note patterns.
- Middle Staff:** Soprano clef, includes sixteenth-note patterns.
- Bottom Staff:** Bass clef, includes sixteenth-note patterns.

Dynamics: **ff**, **f**, **ff**, **mf**.

198

mf

ff

mf

201

(mf) -> *f*

mp -> *mf*

(mf) > *mp* *mf*

mp

204

mf

mp

mp

207

Musical score page 207. The score consists of three staves. The top staff has a treble clef, the middle staff has a treble clef, and the bottom staff has a bass clef. Measure 1 starts with a rest followed by a dynamic of ***ff***. Measures 2 and 3 show eighth-note patterns. Measure 4 starts with a dynamic of ***mf***.

211

Musical score page 211. The score consists of three staves. The top staff has a treble clef, the middle staff has a treble clef, and the bottom staff has a bass clef. Measures 1 through 4 show eighth-note patterns. Measure 5 starts with a dynamic of ***p***.

215

Musical score page 215. The score consists of three staves. The top staff has a treble clef, the middle staff has a treble clef, and the bottom staff has a bass clef. Measures 1 through 4 show eighth-note patterns. Measure 5 starts with a dynamic of ***p***.

219

mp ff mf

5 16

5 16

5 16

223

227

227

7:6

9 32

2 4

7:6

ff

9 32

2 4

mf

9 32

2 4

mf

Musical score for piano, page 10, measures 230-231. The score consists of three staves: Treble, Treble, and Bass. Measure 230 starts with a rest followed by a dynamic instruction. The right hand begins with a sixteenth-note pattern: B, A, G, F#; C, B, A, G; D, C, B, A; E, D, C, B. Measure 231 continues with a sixteenth-note pattern: B, A, G, F#; C, B, A, G; D, C, B, A; E, D, C, B. The bass staff shows sustained notes with grace notes. Measure 232 begins with a sixteenth-note pattern: B, A, G, F#; C, B, A, G; D, C, B, A; E, D, C, B. The bass staff shows sustained notes with grace notes.

Musical score for orchestra, page 10, measures 234-235. The score consists of six staves. Measure 234 starts with a forte dynamic (f) in 2/4 time. The first staff has a bassoon part with eighth-note patterns and a cello part with sustained notes. The second staff features a woodwind section with eighth-note patterns. The third staff shows a brass section with eighth-note patterns. Measure 235 begins with a piano dynamic (p) in 6/8 time. The first staff continues with bassoon and cello parts. The second staff has a woodwind section. The third staff has a brass section. Measure 236 concludes with a piano dynamic (p) in 6/8 time.

Musical score for orchestra and piano, page 237, measures 1-4. The score consists of three staves: Violin I (top), Violin II (middle), and Cello/Bass (bottom). The Violin I staff begins with a dynamic **p**. The Violin II staff begins with a dynamic **mp**. The Cello/Bass staff begins with a dynamic **p**. Measure 1: Violin I plays eighth-note pairs. Violin II plays eighth-note pairs. Cello/Bass plays eighth-note pairs. Measure 2: Violin I plays eighth-note pairs. Violin II plays eighth-note pairs. Cello/Bass plays eighth-note pairs. Measure 3: Violin I plays eighth-note pairs. Violin II plays eighth-note pairs. Cello/Bass plays eighth-note pairs. Measure 4: Violin I plays eighth-note pairs. Violin II plays eighth-note pairs. Cello/Bass plays eighth-note pairs.

240

Musical score for page 23, measures 240-243. The score consists of three staves: Treble, Bass, and a third staff. Measure 240 starts with a whole note followed by eighth-note pairs. Measure 241 has a dynamic 'p' and includes grace notes. Measure 242 shows a melodic line with eighth-note pairs. Measure 243 concludes the section.

244

Musical score for measure 244. It features two staves. The top staff is in 4/4 time and includes a dynamic 'mf'. The bottom staff is in 4/4 time and includes a dynamic 'mf'.

247

Musical score for measure 247. It features three staves. The top staff is in 3/8 time. The middle staff is in 3/8 time. The bottom staff is in 3/8 time and includes a dynamic 'ff'.

251

mp ff mf

255

pp