

Waves of Refraction

for guitar and tape

by
Jon Christopher Nelson

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Waves of Refraction (1992) for guitar and tape creates aural illusions which are analogous to the visual illusions of light waves refracted through water. Just as an object submerged in water appears slightly warped and unstable, the guitar refracted by the computer-generated tape sounds altered and mutable. At the beginning of the composition, the tape accurately replicates the guitar sounds. However, the tape quickly undergoes a metamorphosis, becoming more unusual and exploratory as the composition unfolds. The guitar also presents material that changes from nervous and disjunct figuration to more lyric lines. *Waves of Refraction* was commissioned by Carlos Molina, to whom the composition is dedicated. The computer-generated tape was produced in the Florida International University Electronic Music Studio.

Notes for the performer:

Chromatic alterations apply throughout the measure.

The guitar part may be played with a certain amount of liberty. The fermatas and pauses are included to provide the performer with moments to wait for the tape cues (if waiting is necessary). In addition to the exceedingly fast finale and the percussive guitar punctuations throughout the score, there are five different musical styles juxtaposed in this work. These playing styles are marked with rehearsal markings A, B, C, D, and E. Although specific rhythms have been notated within the tempi provided in the score, it may be easier to simply have a rough idea of tempo for each of these styles. The music within the A sections should be fast and the rhythms should be played as accurately as possible. The B sections are slow, introspective sections which usually occur as cadences or cadential extensions. The most lyric sections are played at a moderato tempo and are designated by the rehearsal letter C. Music at any rehearsal letter D should be played as a *leggiero* arpeggiation at an *allegretto* tempo. Rehearsal letter E represents a cross between letters C and D in that it should be lyric and tuneful, yet arpeggiated and a little faster than C.

The notation for the tape portion only includes significant cues and entrances. The tape part has been omitted from the score in measures 156-238 and the performer is asked to simply play as fast as possible throughout this section. Upon completing this section, the performer is asked to continue playing in this wild and erratic fashion until the tape cue in m. 240. The performer may take some time getting used to the cues and should feel free to adjust their tempi in response to the cues.

A thick horizontal beam with two thin vertical beams on the right side indicates the moment when the tape part rests.

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Allegro ♩ = 120

Misterioso Repeat until tape cue for second measure.

guitar

tape

1

8

pp

mf

sfz

f sfz

pp

sfz

f

Tape starts about 5" after the guitar begins. 15"

pppp

sfz

p

5

f

mp

f

sfz

sffz

mf

ff

slide fingers down string 6

ord. 3

8

mf

sfz

mp

f

sfz

slide fingers down string 6

10

sffz

ff

fff

sffz

ffff

simile

6

ppp

sfz

f

a tempo
Molto Secco

mp 14

3 5:4 simile

etc. (the imitation continues, getting more dense and distorted)

mp

1-XII ord. l. v. 4-IX l. v. 3-VII l. v. // full pizz. ord. l. v.

mf *mp* *mf* *mp* *mf* *sfz* *mp* *ff*

19

ff

sfz

l. v. // Secco Cantabile

mf *p* *p*

24

ff *pp*

a tempo
full pizz.

Cantabile
ord.

4-VII l. v.
2-IX l. v.

29 *f* *p* *mf* *mp* *mf* *ff* //

(imitation of m. 29 guitar part)

30 *fff* *mp* *ff* *mp*

34 *mp* *mf* *mp* *mf* *mf*

35 *f* *mp* *mf* *f* *sfz* *f* *sfz*

38 *f* *ff* *mf*

3-IX l. v.
4-VII l. v.
5-IX l. v.
2-IX l. v.

39 *f* *mp* *mf* *f* *sfz*

5:3

- 3 -

44

ord.

p *f* *mp*

2-XII
3-XII

4-IX
1. v.

//

sul tasto

5:4 5:4

mf *ff* *p*

Cantabile
ord.

49

pp *f* *mf*

a tempo

6-IV
3-V

5-VII

2-IV
1-VII

1. v.

(imitation continues)

ppp *p* *mf*

54

sul tasto

sfz *mf*

ord.

p

a tempo
sul tasto

mf

sfz *pp* *pp* *sfz*

Sub *mp*

Sva

- 4 -

58

ord.

sfz

f

rit.

Andante ♩ = 76

Espressivo

mf

sfz

62

mf

p

ff

mf

mp

mp

sfz

Repeat first beat until the tape cue.

3

3

5:4

7:4

7:4

67

sfz

mf

f

mp

sfz

ppp

3

6

6

6

8va

- 5 -

70

Musical score for measures 70-73. The upper staff (treble clef) contains a melodic line with triplets and dynamic markings: *mf*, *sfz*, *f*, *mp*, *mf*, and *mp*. The lower staff (treble clef, marked *(8va)*) contains a supporting line with dynamic markings: *mp*, *pp*, and *sfz*.

74

Musical score for measures 74-76. The upper staff (treble clef) contains a melodic line with triplets and dynamic markings: *f*, *l. v.*, *l. v.*, *sfz*, *mp*, *f*, *p*, and *mf*. The lower staff (treble clef) contains a supporting line with dynamic markings: *mp* and *mf*.

77

Musical score for measures 77-80. The upper staff (treble clef) contains a melodic line with triplets and dynamic markings: *sfz*, *mp*, *f*, *mf*, and *f*. The lower staff (treble clef) contains a supporting line with dynamic markings: *ff*, *pp*, and *mf*.

Moderato ♩ = 96

sul tasto

Musical score for measures 80-83. The upper staff is in treble clef with a 3/4 time signature. It features a complex rhythmic pattern of eighth and sixteenth notes. The lower staff is in bass clef with a 3/4 time signature, showing a simple harmonic accompaniment. Dynamics include *pp* and *mp*. A hairpin indicates a crescendo from *pp* to *mp*. A text annotation reads: "A harmonic change or note entrance occurs with each change in the guitar pattern."

Musical score for measures 84-87. The upper staff is in treble clef with a 3/4 time signature. It features a complex rhythmic pattern of eighth and sixteenth notes. The lower staff is in bass clef with a 3/4 time signature, showing a simple harmonic accompaniment. Dynamics include *mf*, *subito p*, and *mf*. A hairpin indicates a crescendo from *mf* to *subito p*, followed by a hairpin indicating a crescendo from *subito p* to *mf*. A hairpin in the lower staff indicates a crescendo from *mf* to *sfz*.

Musical score for measures 88-91. The upper staff is in treble clef with a 3/4 time signature. It features a complex rhythmic pattern of eighth and sixteenth notes. The lower staff is in bass clef with a 3/4 time signature, showing a simple harmonic accompaniment. Dynamics include *f*, *subito p*, *mf*, *f*, and *ff*. A hairpin indicates a crescendo from *f* to *subito p*, followed by a hairpin indicating a crescendo from *subito p* to *mf*. A hairpin in the lower staff indicates a crescendo from *mf* to *f*, followed by a hairpin indicating a crescendo from *f* to *ff*.

93 *ff* *ord.* *a tempo sul pont.* *p*

97 *f* *p*

101 *f* *mf* *mp* *Andante ord.* $\text{♩} = 76$

Repeat last beat until tape cue.

105

mf mp p sfz pp

Detailed description: This system contains measures 105 through 109. The upper staff features a melodic line with a dynamic range from *mf* to *p*, ending with a *sfz* accent. The lower staff provides harmonic support with a *pp* dynamic.

110

sul tasto pp mf ff ord. ppp sfz sfz mf

Detailed description: This system contains measures 110 through 115. Measure 110 starts with a *sfz* accent. Measure 111 is marked *sul tasto*. Measure 112 has a *pp* dynamic. Measure 113 has a *mf* dynamic. Measure 114 has a *ff* dynamic and is marked *ord.* Measure 115 has a *ppp* dynamic. The system concludes with a *sfz* accent and a *mf* dynamic.

116

a tempo mp mf pizz. ord. p mp sfz sfz sfz p fff

Detailed description: This system contains measures 116 through 120. Measure 116 is marked *a tempo*. Measure 117 has a *mp* dynamic. Measure 118 has a *mf* dynamic. Measure 119 has a *pizz.* marking. Measure 120 has a *ord.* marking. The system concludes with a *fff* dynamic.

a tempo
Cantabile

122 *mp* *mf* *mp*

sul pont. poco rit. *a tempo ord.* *sul pont. poco rit.* *ord.*

127 *f* *mf* *mp* *mf* *f* *mf* *sfz*

mp *mf* *fff* *sfz*

a tempo *poco rit. sul pont.* *a tempo ord.*

132 *mf* *f* *mp* *f* *mf* *mp*

p *mf*

136

poco rit.
sul pont.

a tempo
ord.

sul pont.

mp *f* *mp* *mf* *f* *f*

140

poco rit.
ord.

a tempo
ord.

sul pont.

ord.

mf *f* *mf* *f* *ff*

mf *mf*

144

sfz *mf* *ff* *mf* *mp* *p* *ff*

rit. *a tempo*

f *pp* *sfz* *mf*

- 11 -

If Necessary, repeat this marcato chord until the tape cue.

Allegro Vivace ♩ = 144

148

slide fingers down string 6

Play as fast as possible from here to m. 240. Listen for tape cue and skip to m. 240 if necessary. Otherwise, improvise until the cue as outlined in m. 239.

Nervoso e Strepitoso

153

The tape simply continues with more fast and wild music to m. 240.

160

166

173

mp sfz

Musical staff 173: Treble clef, 8/8 time signature. The staff contains a series of chords and melodic lines. A dynamic marking of *mp* is placed below the first measure, and *sfz* is placed below a chord in the fifth measure.

180

f sfz f mp mf

Musical staff 180: Treble clef, 8/8 time signature. The staff contains a series of chords and melodic lines. Dynamic markings include *f*, *sfz*, *f*, *mp*, and *mf*. There are also trill markings and a triplet of eighth notes.

Cantabile sul tasto

187

p sfz f sfz mf ff

Musical staff 187: Treble clef, 8/8 time signature. The staff contains a series of chords and melodic lines. Dynamic markings include *p*, *sfz*, *f*, *sfz*, *mf*, and *ff*. There are also trill markings, a triplet of eighth notes, and a marking "ord." above a chord.

194

f ff

Musical staff 194: Treble clef, 8/8 time signature. The staff contains a series of chords and melodic lines. Dynamic markings include *f* and *ff*. There are also trill markings and a triplet of eighth notes.

201

sfz f mf f sfz ff f sfz

Musical staff 201: Treble clef, 8/8 time signature. The staff contains a series of chords and melodic lines. Dynamic markings include *sfz*, *f*, *mf*, *f*, *sfz*, *ff*, *f*, and *sfz*. There are also trill markings and a triplet of eighth notes.

209 *sfz* *mf* *fff* *ff* *sfz* *mf*

216 *ff* *mf* *sfz* *sfz* *f* *fff* *mf*

222 *f* *fff* *sfz* *ff* *mf*

229 *ff* *sfz* *ff* *f* *mf* *fff*

234 *ff* *f* *fff* *sfz* *ff* *fff* *sfz*

15"

Improvise in a similar fashion, getting louder, faster, and more percussive. Respond to the electronic tape.

239

fff

mp

10"

fffz

ffff

The tape contains similar sounds.

ord.

242

fff

mf

ff

fff

fffz

fff

fffz

fffz

5:4

3

fff

fffz

fffz