Compositional Strategies in Music for solo instruments and electroacoustic sounds

Javier Alvarez

Thesis submitted for the degree of Ph. D

Part II

City University, London
Music Department
May, 1993.
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Scores of submitted works

1. Papalotl (1986-7)  
   for piano and electroacoustic sounds

2. On Going on (1987)  
   for baritone sax and electroacoustic sounds

3. Acuerdos por Diferencia (1989)  
   for harp and electroacoustic sounds

   for tenor steel pan and electroacoustic sounds

5. Mannam (1992)  
   for kayagum and electroacoustic sounds
Javier Alvarez

London 1987
Papalotl (1987)
for piano and electroacoustic sounds

Performance notes

• Duration: 13'14"

• About the score

The electroacoustic part in the score is intended as a reference for synchronisation purposes. The click track carries throughout the length of the music according to metre changes and bar subdivisions. It is recommended that the performer learns his/her part by memory. This approach will give the pianist the chance to play in a more creative way, pacing naturally and "swinging" within the boundaries of the electroacoustic part. This may also make the use of the click track redundant, to the advantage of a cleaner and simpler presentation.

• Piano amplification and diffusion.

The piano should be amplified with (preferably) three condenser mics to cover its entire register evenly. The amplified signal should come out of the speakers nearer to the piano or the front speakers. The electroacoustic sounds may come out of all speakers available. The balance between piano and electroacoustic material should be matched properly to avoid predominance of one over the other, and should be done by a musician operating the mix. It may be useful, depending on the characteristics of the hall, to add a small amount of reverberation to the piano in order to help the balance between instrument and electroacoustic material.

• Technical configuration and layout

• Electroacoustic material - specifications

Stereo. Available on the following digital tape formats:

a) PCM encoded onto Betamax, VHS and U-Matic to PAL or NSTC standards. Click track on audio tracks.

b) ADAT-music on tracks 1 and 2. Click track on track 8

c) DAT without click track.
J = J = 88 ca. Tape solo 1

like bells!

repeat 12 times

diminuendo molto — blend onto tape solo (and into rhythm pattern)

ped sempre

\( \text{ANO} \)

\( \text{PIANO} \)
On going on was commissioned by Stephen Cottrell with funds provided by the Eastern Arts Association in 1987.

London 1987
On going on
for baritone saxophone and electroacoustic sounds

Performance Notes

• Saxophone

This work was originally conceived for a baritone saxophonist playing the live part. However, in view of current developments it is possible to do a realization of the work using a Midi Wind Controller (Yamaha WX7 for example) to play the baritone sax part. Please refer to the information below.

If using a baritone saxophone, it must include the low A extension. The amplification of the instrument is best achieved using two high quality (condenser, preferably) microphones which cover the lower and the upper end of the instrument respectively. These should be panned at approximately 30 degrees equidistant from the centre of the stereo field. The sound of the instrument should come out of the two front loudspeakers.

When using a wind controller, this will be set up to play a sampled sound available on floppy disk for an Akai S900 sampler, in parallel to a performance on a Yamaha TX81Z. The stereo outputs of the sampler and synthesizer must be treated in the same manner as when using the baritone sax microphones, that is, panning should be left/right at 30 degrees and coming out of the two front speakers.

• Using a computer

This work can be performed using either the computer controlled system described below or in cases where this is not possible or available, a prerecorded version of the computer portion may be used. (See under Tape below).

• Equipment required with computer control system:

an Apple Macintosh Computer with suitable Midi Interface controlling:

an Akai S900 Midi Digital Sampler and
two Yamaha SPX90 Signal Processors, one processing the sounds from the Tone Generators and from the sampler. The second is used to process the sound of the saxophone or wind controller.

Note that a second Akai S900 and a TX81Z are required if playing with a Midi wind controller.

• Configuration 1 (computer with saxophone/wind controller)
• Tape

The prerecorded tape is available on the following formats:
- Digital: Betamax, U-Matic or VHS (Pal/Seecam or NSTC) PCM encoded in Stereo

a) the synchronization of the opening of the piece will have to be done manually (for example, by starting the tape 10 seconds before program) so the saxophonist can start exactly with the music on tape. This must be rehearsed to a high degree of accuracy. The tape should be dimuod on all loudspeakers available and;

b) the SPX90 processing the saxophone should be operated manually according to the score.

• Configuration 2 (tape with sax/wind controller)

• Software

a. Disk A contains the music file as a Performer V.22 (1987) file and the TX814 Voice and Performance Data (Opcode Midi Librarian)

Disk B contains sound samples for the Akai S900. (these include those sounds used by the wind controller - refer to titles on disks)

b. All other data is included in the score (TX81Z Voice and Performance Data and SPX90 Settings).

• TX81Z Voice and Performance Data

Except for voice data listed here (OnGoing 1 & 2) all the other voices present in the Performance charts below are preset voices of the TX81Z.

a) Voices

1) Voice Name: OnGoing 1 (for PF On Going On 3)

| Algorithm | 3 |
| Feedback | 0 |
| Frequency | 2.25, 50, 2.99, 3.00 |
| Osc. Wave | W1, W5, W6, W7 |
| Detune | +3, 0, 0, 3 |
| Out Level | 92, 92, 83, 81 |

Pitch
Amplitude
(on/off)

| Sensitivity |
| Key velocity | 0, 0, 0, 0 |

LFO

| Wave | Triangle |
| Speed | 1 |
| Delay | 0 |
| P Mod Depth | 0 |
| A Mod Depth | 21 |
| Sync | off |

EG Shift

| Rate | 1, 0, 36 |
| Level | 0, 36, 44 |

SCALING |
### Function

<table>
<thead>
<tr>
<th>Mode Poly</th>
<th>P Bend Range 7</th>
<th>Portamento FT</th>
<th>Poly</th>
<th>P Bend Range 7</th>
<th>Portamento FT</th>
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</thead>
<tbody>
<tr>
<td>Portamento time 0</td>
<td>FCVol 99</td>
<td>FCPitch 0</td>
<td>FC Amplitude 0</td>
<td>MWPitch 50</td>
<td>MWAmplitude 0</td>
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<tr>
<td>BC Pitch 50</td>
<td>BC Amplitude 0</td>
<td>PC Pitch Bias 0</td>
<td>B CEG Bias 0</td>
<td>Middle C</td>
<td>C3</td>
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### Voice No.

<table>
<thead>
<tr>
<th>Receive Chan</th>
<th>Limit L</th>
<th>Detune</th>
<th>Volume</th>
<th>Limit H</th>
<th>Note Shift</th>
<th>Reverb Rate</th>
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</thead>
<tbody>
<tr>
<td>C2</td>
<td>C2</td>
<td>C2</td>
<td>97</td>
<td>G8</td>
<td>0</td>
<td>97</td>
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<td>G8</td>
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<tr>
<td>C2</td>
<td>C2</td>
<td>C2</td>
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<td>G8</td>
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<td>G8</td>
<td>97</td>
<td>G8</td>
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<td>97</td>
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### Performance Name: On Going On 2

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Receivechan</th>
<th>Limit L</th>
<th>Detune</th>
<th>Note Shift</th>
<th>Volume</th>
<th>Limit H</th>
<th>Note Shift</th>
<th>Reverb Rate</th>
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</thead>
<tbody>
<tr>
<td>C3</td>
<td>D23</td>
<td>A15</td>
<td>D27</td>
<td>C04</td>
<td>D25</td>
<td>D23</td>
<td>D30</td>
<td></td>
</tr>
<tr>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
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</table>

### LFO

<table>
<thead>
<tr>
<th>Pitch</th>
<th>Amplitude</th>
<th>Key velocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>4 1 1 0</td>
</tr>
</tbody>
</table>

### 2) Voice Name: OnGO On 2 (for PF On Going On 4)

<table>
<thead>
<tr>
<th>Algorithm</th>
<th>Feedback</th>
<th>Sensitivity</th>
<th>Frequency</th>
<th>Osc. Wave</th>
<th>Detune</th>
<th>Out Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>7</td>
<td>10 15 15 4</td>
<td>.50 2.00 6.28 C2 40Hz/F255Hz</td>
<td>W1 W1 W2 W8</td>
<td>+3 -3 +3 -3</td>
<td>99 82 96 75</td>
</tr>
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</table>

### EG

<table>
<thead>
<tr>
<th>Rate</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
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<td>0</td>
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### SCALING

<table>
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<th>P Bend Range 12</th>
<th>Portamento FT</th>
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</thead>
<tbody>
<tr>
<td>Portamento time 0</td>
<td>FCVol 99</td>
<td>FCPitch 0</td>
<td>FC Amplitude 0</td>
<td>MWPitch 50</td>
<td>MWAmplitude 0</td>
</tr>
<tr>
<td>BC Pitch 50</td>
<td>BC Amplitude 0</td>
<td>PC Pitch Bias 0</td>
<td>B CEG Bias 0</td>
<td>Middle C</td>
<td>C3</td>
</tr>
</tbody>
</table>

### 2) Voice Name: OnGO On 2 (for PF On Going On 4)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Receivechan</th>
<th>Limit L</th>
<th>Detune</th>
<th>Note Shift</th>
<th>Volume</th>
<th>Limit H</th>
<th>Note Shift</th>
<th>Reverb Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>D23</td>
<td>A15</td>
<td>D27</td>
<td>C04</td>
<td>D25</td>
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<tr>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
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<td>G8</td>
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</table>

### LFO

<table>
<thead>
<tr>
<th>Pitch</th>
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<th>Key velocity</th>
</tr>
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<tbody>
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<td>0</td>
<td>3</td>
<td>4 1 1 0</td>
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### 2) Voice Name: OnGO On 2 (for PF On Going On 4)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Receivechan</th>
<th>Limit L</th>
<th>Detune</th>
<th>Note Shift</th>
<th>Volume</th>
<th>Limit H</th>
<th>Note Shift</th>
<th>Reverb Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>C3</td>
<td>D23</td>
<td>A15</td>
<td>D27</td>
<td>C04</td>
<td>D25</td>
<td>D23</td>
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### LFO

<table>
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<tr>
<th>Pitch</th>
<th>Amplitude</th>
<th>Key velocity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>3</td>
<td>4 1 1 0</td>
</tr>
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</table>
**Performance Name:** On Going On 3 (P. Cng Tbl : PGM 60 = PF03)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign Mode</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>Maxnotes</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Voice No. (OnGOn 1)</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
<td>122</td>
</tr>
<tr>
<td>Receivechan</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Limit H</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
</tr>
<tr>
<td>Detune</td>
<td>4</td>
<td>-4</td>
<td>+2</td>
<td>-2</td>
<td>-5</td>
<td>+5</td>
<td>-6</td>
<td>+6</td>
</tr>
<tr>
<td>Note shift</td>
<td>-12</td>
<td>0</td>
<td>0</td>
<td>+12</td>
<td>0</td>
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<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Volume</td>
<td>99</td>
<td>97</td>
<td>94</td>
<td>93</td>
<td>99</td>
<td>94</td>
<td>92</td>
<td>99</td>
</tr>
<tr>
<td>Out Assign</td>
<td>II</td>
<td>II</td>
<td>II</td>
<td>II</td>
<td>II</td>
<td>II</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>LFO Select</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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</tr>
<tr>
<td>Microtune</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>Effect select</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
</tr>
</tbody>
</table>

**Performance Name:** On Going On 4 (P. Cng Tbl : PGM 63 = PF04)

<table>
<thead>
<tr>
<th>Instrument</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assign Mode</td>
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<td>Normal</td>
<td>Normal</td>
<td>Normal</td>
</tr>
<tr>
<td>Maxnotes</td>
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<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Voice No. (OnGOn 2)</td>
<td>123</td>
<td>123</td>
<td>123</td>
<td>123</td>
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<tr>
<td>Receivechan</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Limit L</td>
<td>C2</td>
<td>C2</td>
<td>g4</td>
<td>C2</td>
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<td>G8</td>
<td>G8</td>
<td>G8</td>
<td>G8</td>
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<td>+3</td>
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<td>Note shift</td>
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<td>+3</td>
<td>0</td>
</tr>
<tr>
<td>Volume</td>
<td>99</td>
<td>99</td>
<td>98</td>
<td>99</td>
</tr>
<tr>
<td>Out Assign</td>
<td>II</td>
<td>II</td>
<td>II</td>
<td>II</td>
</tr>
<tr>
<td>LFO Select</td>
<td>1</td>
<td>2</td>
<td>vib</td>
<td>1</td>
</tr>
<tr>
<td>Microtune</td>
<td>off</td>
<td>off</td>
<td>off</td>
<td>off</td>
</tr>
<tr>
<td>Effect select</td>
<td>Delay</td>
<td>Delay</td>
<td>Delay</td>
<td>Delay</td>
</tr>
</tbody>
</table>

**c) General utility data on TX81Z**

- Midi receive channel = 4
- P. Change = on
- Cont change = G4
- A. Touch-BC = on
- P. Bend = on
- Note on/off = all
- Exclusive = on
- Combine = on

**Effect 1**
- Delay Time = 0.15s
- Pitch Shift = 7
- Feedback = 7
- Effect level = 99

**Effect 3**
- C3 (C3/A#3)
- D3 (F3/C5)
- D#3 (D#3/F3/C#4/C5)
- E3 (G2/C3/E3)
- F3 (F3/A3/D#4/A#3)
- F#3 (A#2/C#3/D#3/F#3)
- G3 (B2/D3/G3)
- G#3 (C3/D#3/F3/G#3)
- A3 (G#2/F3/A3)
- A#3 (A#3/F4/A#5/E3)
- B3 (D3/F3/G3/B3)
• SPX90 Programs

The SPX90 at the mixer is used to process the baritone saxophone’s sound. The score prescribes 12 SPX90 programs (marked as programs #51 to 62). These can be stored in those for alternate memory locations as long as they are consecutive, so as to facilitate the immediate recall and switching between them.

1. Reverb (51 in score)
   - RT=1.5 to 2.0 secs (depending on hall)
   - HI=1.0
   - D=25-40ms (depending on hall)
   - HPF=Thru
   - LPF=Thru

2. Reverse gate (52 in score)
   - Type=Reverse
   - Size=3.7
   - Liveliness=10
   - Delay=324.0 ms
   - LPF=Thru

3. Flange (53 in score)
   - Mod freq=0.1 Hz
   - Mod depth=90%
   - Mod Delay=5.0 ms
   - FB. Gain=89 to 90%

4. Pitch Shift A (54 in score)
   - LPitch =0
   - Fine=+25
   - Delay=202.0 ms
   - FG=35%
   - Key=Off (or C3)

5. Gate reverb (55 in score)
   - Type=Random
   - Size=1.1
   - Liveliness=6
   - Delay=151.5 ms
   - LPF=Thru

6. Delay L-R (56 in score)

7. Stereo Echo (57 in score)
   - LD=540 ms, 0LFG=15
   - RD=324 ms, 0LFG=20
   - High=x1.0

8. Early Reflection (58 in score)
   - Type=Random
   - Size=1.5
   - Liveliness=10
   - Delay=25 ms
   - LPF=Thru
9. Delay L-R (59 in score)
   LD=402ms 0LFG=60
   RD=270ms 0LFG=20
   Hogh=x1.0

10. Pitch Shift C (60 in the score)
    Pitch left=-12          Pitch right=-12
    Fine left=0            Fine right=-25
    Delay left=135ms       Delay right=200ms

11. Stereo Echo (61 in score)
    LD=270ms 0LFG=60
    RD=201ms 0LFG=58
    High=x1.0

12. Reverb (62 in score)
    RT=20.0 secs
    Hl=1.0
    D=100ms
    HPF=Thru
    LPF=Thru
hold for as long as possible (blend with computer sound)

hold still

play these bars (hold still)
Javier Alvarez

Acuerdos (x) por Diferencia

for harp and electroacoustic sounds

This work was commissioned for Hugh Webb by the Park Lane Group with funds provided by the Greater London Arts Association

London 1989
Performance notes

- Duration: 11'29"

- About the score

The electroacoustic part in the score is intended as a reference for synchronisation purposes. The click track, although not specifically indicated in the score, carries throughout the length of the music according to metre changes and bar subdivisions. It is recommended that the performer learns his/her part by memory. This approach will give the harpist the chance to play with the electroacoustic material in a creative way, pacing naturally and "swinging" within the boundaries of the electroacoustic part. This may also make the use of the click track redundant, to the advantage of a cleaner and simpler presentation.

- Harp amplification and diffusion.

The harp should be amplified with (preferably) three condenser mics to cover its entire register evenly. The amplified signal should come out of the speakers nearer to the harp or the front speakers. The electroacoustic sounds may come out of all speakers available. The balance between harp and electroacoustic material should be matched properly to avoid predominance of one over the other, and should be done by a musician operating the mix. It may be useful, depending on the characteristics of the hall, to add a small amount of reverberation to the harp in order to help the balance between the two.

- Technical configuration and layout

- Electroacoustic material - specifications

Stereo. Available on the following digital tape formats:

a) PCM encoded onto Betamax, VHS and U-Matic to PAL or NSTC standards. Click track on audio tracks.

b) ADAT-music on tracks 1 and 2. Click track on track 8

c) DAT without click track.
Acuerdos por Diferencia

Javier Álvarez
1989
Javier Alvarez

Así el Acero
for tenor steel pan and electroacoustic sounds

This work was commissioned by Simon Limbrick with funds provided by the Henricshen Foundation
London 1988
Así el acero (1988)
for tenor steel pan and electroacoustic sounds

Performance notes

• Duration: 9'11"

Así el Acero can be performed in any of the following ways:

1. Version for steeldrum and a computer control system where the computer controls a Yamaha TX81Z, an Akai S900 Digital Sampler and an SPX90 via a Midi interface.

2. Version for steeldrum and pre-recorded electroacoustic part as indicated in the diagram below.

• Steel pan amplification and diffusion.

The steel pan should be amplified with two high quality condenser microphones placed above the drum in order to cover its entire register evenly. The amplified signal should come out of the speakers nearer to the steel pan or the front speakers. The electroacoustic sounds can come out of all speakers available. The balance between steel pan and electroacoustic material should be matched properly to avoid predominance of one over the other, and should be done by a musician operating the mix. It may be useful, depending on the characteristics of the hall, to add a small amount of reverberation to the steel drum or the electroacoustic material in order to help the overall balance between the two.

• About the score

The score is a study guide for rehearsing the piece. Only the steel pan part is indicated. The score should not be used in performance: the player must learn the work by memory and know the electroacoustic part well enough to be able listen and play with it. In both performance instances however, it may be helpful to relay the click track to the performer via headphones or a lightbox. The click track is either generated by the computer as in version 1 or exists as separate audio track when played with tape as in version 2.

• The tenor steelpan

The steel pan used in Así el Acero is a Fourths and Fifthslead or tenor pan. Sticking patterns in the piece have been thought in relation to this construction scheme. See diagram below. However, it may be possible to use other kind of drum such as the "Invaders" or "Ping pong" types but adjustments concerning the sticking are left to the player.
• Technical configuration and layout

• Electroacoustic material - specifications

Stereo. Available on the following digital tape formats:

a) PCM encoded onto Betamax, VHS and U-Matic to the PAL, Seecam or NSTC standards. Click track on audio tracks.

b) ADAT-music on tracks 1 and 2. Click track on track 8

c) DAT (without click track).
así el acero

J = 120

Tape starts

* add one (if played without a click track)
Javier Alvarez

Mannam
for kayagum and electroacoustic sounds

Mannam was commissioned by the Group de Musique Experimentale de Bourges in 1990.

London 1992
Mannam (1992)
for kayagum and electroacoustic sounds

Performance notes

• Duration: 14'50"

• About the score

The electroacoustic part indicated in the score is intended as a reference for synchronisation purposes. The click track (not indicated) carries throughout the length of the music according to metre changes and bar subdivisions. It is recommended that the performer learns his/her part by memory. This approach will give the player the chance to play in a more creative way, pacing naturally and "swinging" within the boundaries of the electroacoustic part. This may also make the use of the click track redundant, to the advantage of a cleaner and simpler presentation.

• Kayagum amplification and diffusion.

The kayagum should be amplified with two PZM (or condenser contact microphones) plus a condenser air microphone above the instrument to cover its entire radiation and register evenly. The amplified signal should come out of the speakers nearer to the kayagum or the front speakers. The electroacoustic sounds may come out of all speakers available. The balance between kayagum and electroacoustic material should be matched properly to avoid predominance of one over the other, and should be done by a musician operating the mix. It may be useful, depending on the characteristics of the hall, to add a small amount of reverberation to the kayagum in order to help the balance between instrument and electroacoustic material.

• Technical configuration and layout

- Electroacoustic material - specifications

Stereo. Available on the following digital tape formats:

a) PCM encoded onto Betamax, VHS and U-Matic to PAL or NSTC standards. Click track on audio tracks.

b) ADAT-music on tracks 1 and 2. Click track on track 8

c) DAT without click track.
Mannam
for kayagum and electroacoustic sounds on tape

Javier Alvarez
1992
STRUM

repeat ad libitum

Lontano et delicatto