

Spectral Tourist

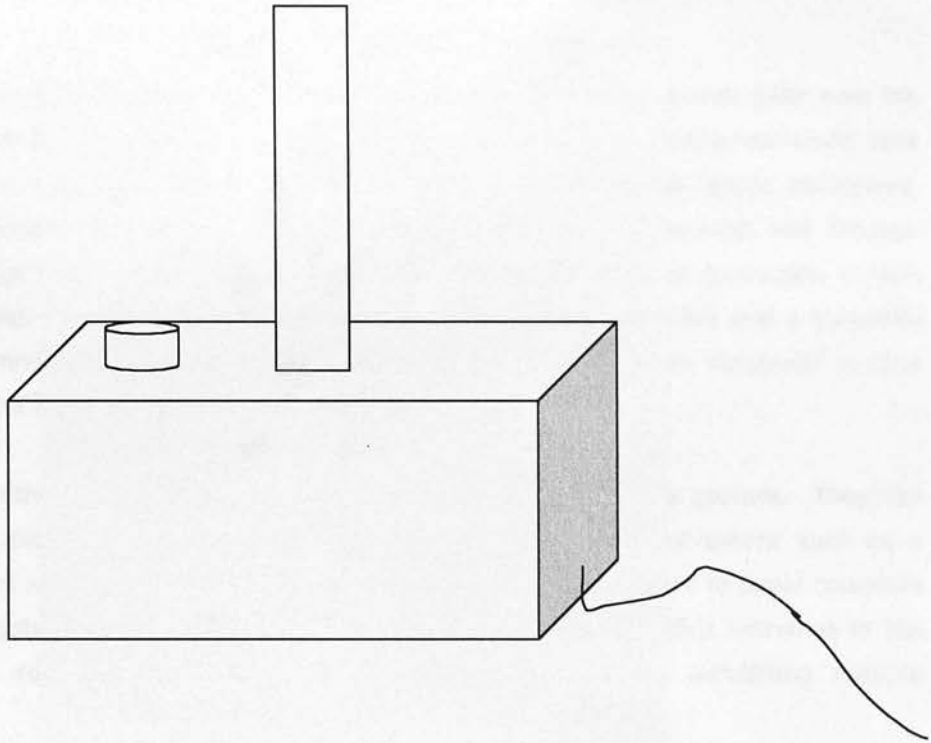
Joystick operated sound production software
for Macintosh Computers (OS 9.1 & .2)

Documentation and
CD recording of performances

The Spectral Tourist

Martin Parker

June 2003



Spectral Tourist

September 2002-June 2003

Software documentation

The relationship between a musician and an acoustic instrument is not solely concerned with converting human gesture into pitch and timbre: there is a process between player and instrument that involves resistance. It is within the struggle to produce and then control a sound that conflict between a musician and his instrument can give rise to complex and interesting results.

It is a continuing struggle to make computer-based sounds that breathe with their own life and to play the computer like a musical instrument. Interfaces for transferring real-world data into the computer such as fader boxes, tracker-ball mice, graphics tablets, game controllers, wireless devices, motion tracking etc., are increasing in flexibility and interest and through software such as Max MSP¹, these interfaces can offer reasonable ways of converting human movement into sound. Joysticks, for example, are a ubiquitous, inexpensive and a generally reliable piece of technology. An external MAX object was written by Adam Schabtach² in 2001 to collect joystick data and view it within Max MSP.

However, there is nothing inside the hardware of most joysticks to curb a gesture. They can be pulled between extremes in milliseconds, while with a real world instrument such as a saxophone, extremes are very hard to reach and have to be found with care to avoid complete breakdown of the system and a split note. Therefore, grafting the joystick's extremes to the extremes of one's software may result in an artificial and possibly unfulfilling musical experience.

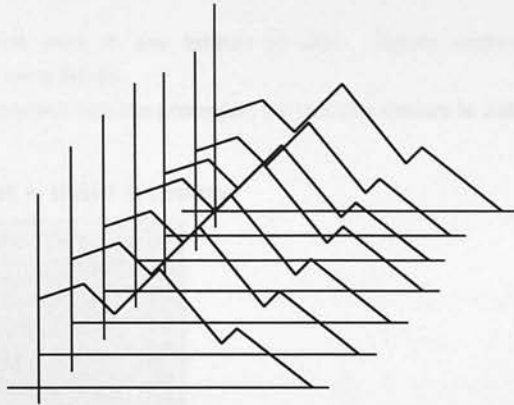
One way in which to create some 'resistance' is to imagine the joystick as a tool for travelling rather than for gesture mapping. In computer games for example, one is never in the same place for long. Pushing forwards with differing degrees of intensity means that one travels forward at different speeds. This approach has been implemented in the *Spectral Tourist*, although the landscape traversed is not one of snipers and guard dogs but the hilly terrain of a spectrogram.

A spectrogram can be an interesting landscape to behold but as with most spectral analysis and processing, the results depend on the quality and harmonicity of the source. Essentially, a performance with the *Spectral Tourist* involves taking a journey through a sequence of spectra stored within the computer's memory. The spectrograms can be generated from live input or from sound files stored on the computer.

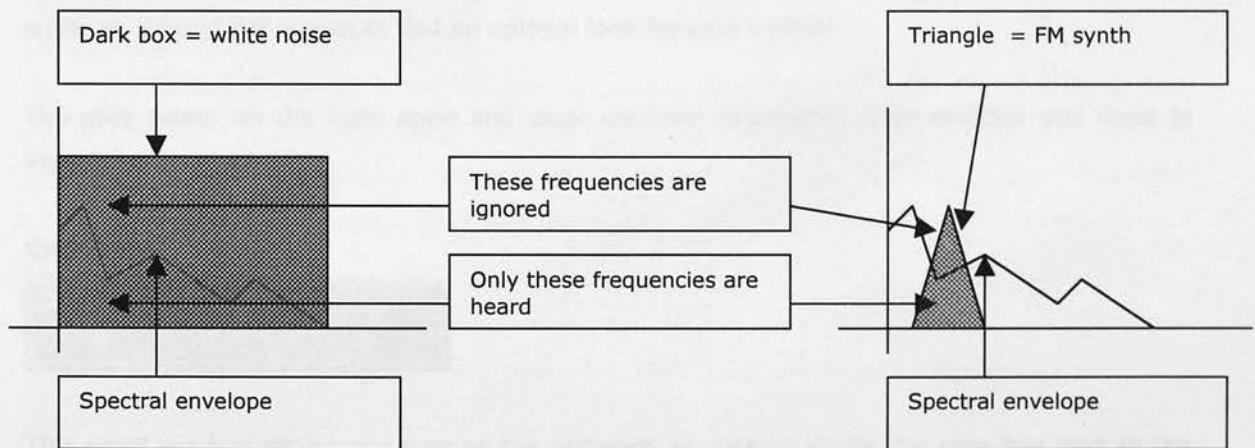
¹ Max MSP, graphical programming environment version 4.1 <http://www.cycling74.com>

² Adam Schabtach author of the **insprock** object, downloadable from
http://www.studionebula.com/files/IS_Object_010901.sit.hqx
(URL valid 20 April 2003)

The spectra stored within the *Spectral Tourist* preserve to a high degree the frequency and timbral quality of their sources only the sound is freed from its original place in time. Imagine each sheet of spectral data lined up: the joystick can jump from sheet to sheet, morph from one sheet to another or smooth between sheets over time:



The spectral data is re-animated while you travel with anything from live signal to white noise and an FM synthesizer. Imagine again the spectral data behaving like a filter for white noise. The noise could be described as a fairly complete sound source featuring most frequencies almost all of the time. When the white noise is filtered by the spectrum, the resulting sound will be a close representation of the source. However, if the re-synthesis sound source is less stable than white noise, the effect is to bring a mesh between the stored spectrum and the impulse sound:



The following pages explain in some detail how to get a result from the SPECTRAL TOURIST (version 1); like most instruments, familiarity with the idiosyncrasies and the internal resistance of the system will yield better results.

Spectral Tourist – System Requirements

Absolute minimum 500mhz Macintosh G4 processor

256mb RAM

Allow plenty of disk space for storing data and recording performances

Input sprocket compatible joystick

OS 9.1 (or 9.2.2)

This software will not work in any version of OSX. Future versions may be ported to OSX. Please contact mp@tinpark.com for more details.

If you are getting desperate with the processor, try reducing colours to 256 and mute any patches that are not in use.

Spectral Tourist – main window



When you first open the *Spectral Tourist*, you will encounter this window in the top left hand corner of the screen. The default set-up of the screen has been optimised for a resolution of 1152x768, the same dimensions as a Titanium Powerbook 15'. It is possible to move these windows around the screen to find an optimal look for your system.

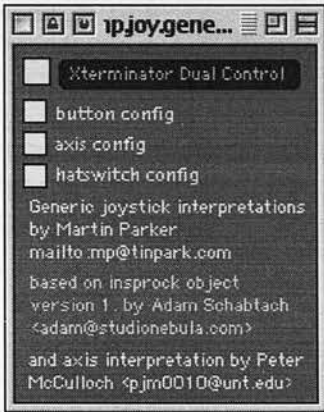
The grey boxes on the right open and close windows depending upon whether you need to view them.

CPU state

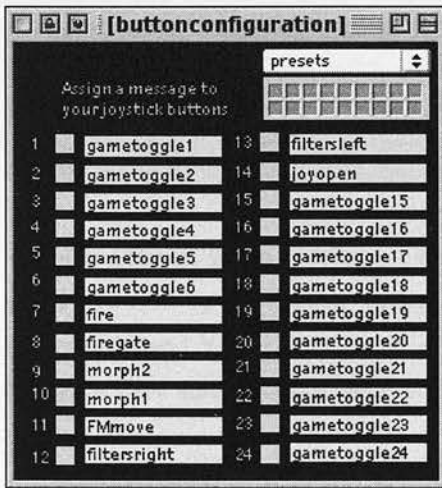


This small window allows you turn on the software by clicking inside the grey box next to the DAC (Digital Analogue Converter). You can also monitor the CPU level. This is important. In trial versions of this software the sound tended to break up when CPU cycles peaked above 51%. This was always defeatable by muting the processing within the patch pfft~ vectralis4096. It is possible to mute the analysis patch directly from your keyboard using the M button

Configuring your joystick³⁴



It is possible to plug any input sprocket, USB compatible gaming device into your computer and configure it for use inside the *Spectral Tourist*. Select your device from the dropdown menu and turn it on with the button to the left of the menu.



Then configure the buttons. Click the buttons on your stick and when you find the two buttons you want to use to allow travelling, type *fire* and *firegate* inside the boxes. These two buttons open the gates that allow you to move the stick and travel through the spectra. The other button assignments are fairly self-explanatory but here is a table of the messages and their action.

³ A note on the *mp.joy.generic* object

This is the control centre where data is collected from the USB port of Apple Macintosh computers. The computer should be running OS9.x and can only be used with input sprocket compatible joysticks. (This software is currently not OSX compatible and will not work on Windows machines.)

I have successfully tested four joysticks made by GRAVIS, Kensington Technology Group, a division of ACCO Brands, Inc. <http://www.gravis.com>

The following sticks and game pads have been used.

Exterminator dual control (very 'noisy' stick)

Destroyer Extreme

Eliminator Game pad

Eliminator Shock Game pad

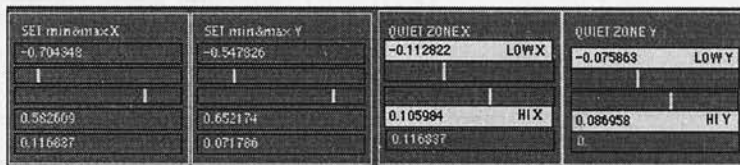
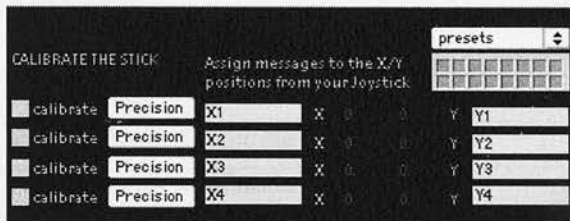
mp.joy.generic calls the USB sprockets to ask if any gaming devices are connected. This is achieved through the *insprock* external designed by Adam Schabtach⁴. It is possible to use as many gaming devices as your system can handle but you need a separate instance of *mp.joy.generic* to read and send data simultaneously. To choose between different devices one at a time, you only need one instance of *mp.joy.generic*

Data from the sprockets is interpreted and parsed to various places where the user can assign a unique message to be read in other patches. Axis numbers range -1.0 to 1.0, with 0 at the centre. Hat switches send out a number (e.g. 8 switches will send 0-7) and buttons give a toggle (0 = off, 1=on)

Each button, stick and switch can be assigned a unique message that is sent wherever the user wants. This object can cope with any compatible controller boasting up to 4 axis controllers, 24 buttons and 16 sets of hat switches.

⁴ Adam Schabtach author of the *insprock* object, downloadable from http://www.studionebula.com/files/IS_Object_010901.sit.hqx (URL valid 20 April 2003)

Message	Action
fire	Opens gate for travel with stick, also triggers new preset in FM synth
firegate	Allows movement when fire is down
Morph1 and morph2	Allows morphing in the two travel patches
FMmove	Allows changing parameters of the FM synth
Joyopen	Allows the stick and fire button to change synthesis parameters
Filtersright/Filtersleft	Allows stick to change the filter amplitudes in the two travel patches



You are allowed up to 4 different axis on your stick but the Spectral Tourist only uses the main stick. They may be a little 'noisy' so calibrate them using the calibrate dialogue and set the extreme X and Y numbers to be set at -1 and 1. You can also establish a quiet zone where the stick may spit data out even though you aren't touching it.

Midi Setup

You will need hardware such as a KENTON CONTROL FREAK that has access to the first 16 midi controller numbers. They are assigned thus:

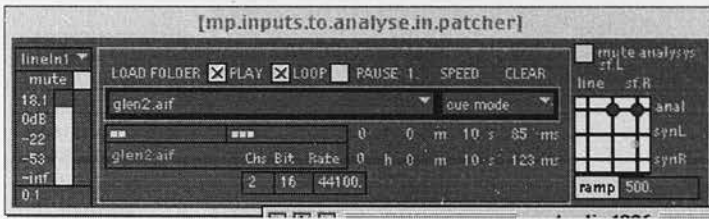
Parameter	Controller number
White Noise Amplitude	5
FM synthesis Amplitude	12
Click synthesiser Amplitude LEFT	6
Pan LEFT	4
Pan RIGHT	13
Re-synthesis Amplitude (LEFT, 1)	1
Re-synthesis Amplitude (LEFT, 2)	2
Re-synthesis Amplitude (LEFT, 3)	3
Re-synthesis Amplitude (RIGHT, 1)	14
Re-synthesis Amplitude (RIGHT, 2)	15
Re-synthesis Amplitude (RIGHT, 3)	16
Clicker Synth Amplitude (RIGHT)	11
Travel speed (LEFT)	7
Travel Speed (RIGHT)	10
Offset Left	8
Offset Right	9

If you have several controllers attached to your system, you will need to select which controller you want to use so open the midi set-up dialogue box.



If you move your sliders around, you will see the dialogue box sliders change but only if you are moving *controller* numbers 1-16.

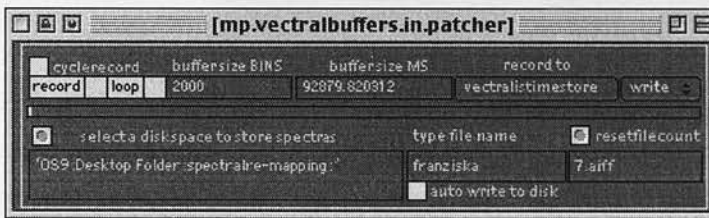
Routing input to analysis and/or re-synthesis



This is the input router for the analysis. Drag and drop a selection of sound files onto the window or load a folder of sound files by clicking on LOAD FOLDER. It is important to click CLEAR before dragging files into the player from the desktop. Alternatively analyse a live signal.

The matrix on the right allows you to route these signals to the analysis patch (anal) or to the resynthesis patches (synL and synR).

Vectral buffers – store the analysed signal



This is the buffer manager where incoming spectral analysis is stored. Up to 15000 frames can be held in up to four buffers named *vectraltimestore (2,3,4)*. (You must have at least 256mb of RAM assigned to the software before you start to run the *Spectral Tourist*).

You can also load spectra from disk, automatically cycle from one buffer to the next when each one fills up and automatically write the buffer to disk when full with a unique file name and location specified before recording begins. This keeps hands free and the analysis constant during a long analysis session.

The Spectral Analyser – Vectralis4096

The screenshot displays the Vectralis4096 software interface, which is divided into several sections for spectral analysis and filtering. At the top, there are control buttons: 'Turn on filtering' (labeled 'filter on'), 'Smooth between frames' (labeled 'no smooth'), and 'The stored spectra' (labeled 'vectralistimestored'). The main display area is divided into three horizontal sections, each with a table of parameters and a corresponding spectral plot. The top section shows the 'vectralis' analysis with parameters: Name: vectralis, frame size: 4096, spectral size: 2048, hop size: 2048, and a 'vzoom' slider set to 1. The middle section shows the 'spectralfilter' window with parameters: Name: spectralfilter, frame size: 4096, spectral size: 2048, hop size: 2048, and a 'vzoom' slider set to 1. The bottom section shows the 'vectralistimestored' window with parameters: Name: vectralistimestored, frame size: 4096, spectral size: 2048, hop size: 2048, and a 'vzoom' slider set to 1. Each section includes a spectral plot with frequency markers at 10.766602 Hz, 5512.5 Hz, 11025 Hz, and 22050 Hz. A 'D' button is located to the left of each plot. At the bottom of the interface, there is a 'first75 bands' section with a checkbox and a bar chart. A 'Control the first 75 bands of the filter more precisely' box points to this section. A 'Filter the analysis by drawing an envelope (click D on the right)' box points to the 'D' button in the spectral filter window. An 'Incoming spectral analysis, 2048 bands, hanning window' box points to the top spectral plot.

Vectralis4096 is a pfft~ sub patch that creates and holds the spectral data. It can easily be muted with the M key on your keyboard to save processing power (the re-synthesis window opens automatically to show you that analysis is not happening and that re-synthesis can begin without overloading CPU). If you have a fast and stable system, it is possible to re-synthesise while analysing.

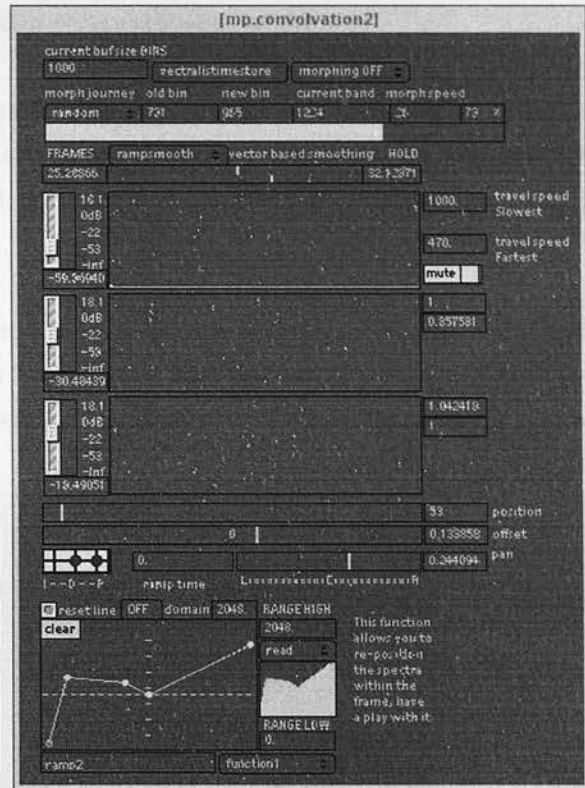
With a 4096 window size, there are only 2048 useful samples, the last half of the window is ignored in this patch because it is a direct inversion of the FFT analysis. Interesting effects might be achieved if this was stored as well, the computer has to work out this inversion anyway, so future versions might make this implementation.

With this window it is possible to filter the incoming signal by drawing a filter envelope, click the D on the left of the spectral filter window. To get more accurate results, use the sliders at the bottom of the patch to access the first 75 frequencies of the analysis. Alternatively zoom into individual samples and draw a new volume using the M icon (just above the D on the left side of the spectral filter window). Filtering the incoming signal may have several uses: for example reducing noise or enhancing/masking certain frequencies that might prove dangerous during re-synthesis.

It is also possible to smooth between each frame of the analysis, smoothing over samples and frames linearly (*rampsmooth*) logarithmically (*slide*) or temporally (*deltaclip*).

Managing the stored spectra - convolution filtering – manipulating the data

- Select the buffer with spectral data, there are four
- Smooth between frames
- Current re-synthesis window used as a filter for re-synthesis signal
- Amplitudes of the re-synthesis of each window
- Position in the buffer from 1- number of BINS
- Mix the signals and pan
- Function to spread the spectrum, have a play with it



- Morph between frames either sequentially or randomly. Change morph speed from 1(slow) to 100(fast)
- First filter window select frequencies with amplitudes between two numbers
- Second filter window select frequencies with amplitudes between two numbers
- Offset position from -1 to 1, 0 is normal

Inside this window, it is possible to manipulate the spectra that were stored, filter in and out certain frequencies, travel through the spectra and control the amplitude of the re-synthesis.

From the top:

Select which buffer you want to travel through (vectralistimestore 2, 3 or 4). Selecting a buffer automatically sends the number of frames inside that buffer to the joystick controller and GUI, so it is a good idea to select a buffer before performing any other operations. Select whether morphing is off with the mouse or with the button you assigned to morphing. You can also set the morphing parameters – to travel through each frame in sequence or to morph to randomly chosen frames (none are repeated) and to select the morphing speed. 1 is slow, 100 is very fast.

It is also possible to smooth between each frame using *rampsmooth*, *slide* or *deltaclip* parameters.

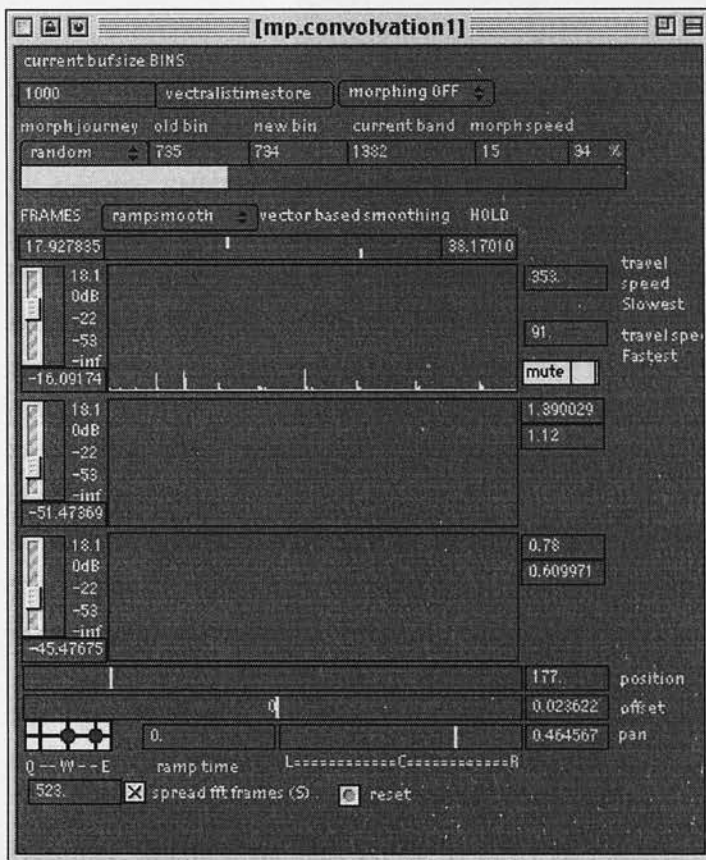
The top waveform shows the selected frame, the two other windows show the selected frame with certain amplitudes filtered out. These can be set with the mouse or by holding down filterLEFT, (*convolution1*) or filterRIGHT (*convolution2*) and moving the analogue stick.

The mouse or a midi fader box can control the volume of each window of re-synthesis. It is generally important not to push these levels too much to avoid distortion, unless of course, that is what you want to achieve.

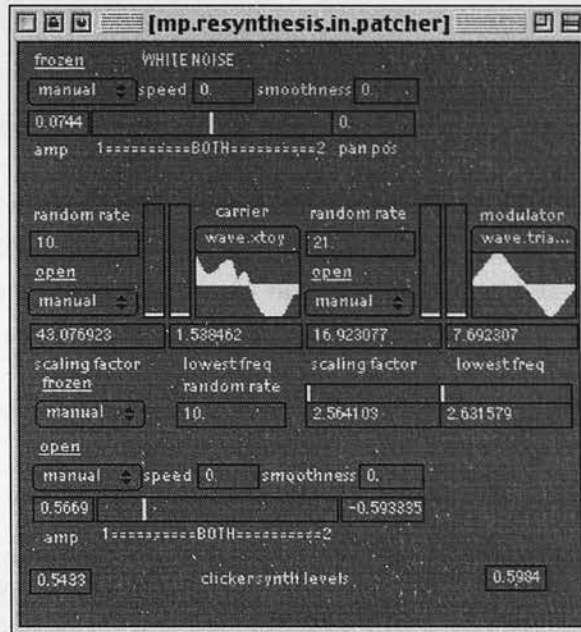
The slider below the waveform windows shows the current frame within the stored spectra (from 1 to the numbers of frames) and the slider below that shows your offset. This means you can change the fundamental frequency of the bin.

Below the slider, the matrix allows you to send the signals to the output of the computer and you can adjust the stereo pan position. The pan can be manipulated by midi controller numbers 4 and 13 and the speed of travelling can be changed with contrller numbers 7 and 10.

The function at the bottom of the window allows you to draw a curve for the spread of the FFT frequencies. A straight line running from bottom left to top right is the normal frame view but pulling the line around allows you to re-map the spectra. Have a play with it.



The left side of the screen is almost the same as the right. The only difference is that rather than use the function window to alter the spectra, you can spread out or reduce the bands instead. This means you can crunch all the bins of the stored spectra into one window or spread the lower frequencies out across the whole spectrum.



RESYNTHESIS

By pressing *SHIFT J*, the joystick is active in this window. Hold down *joyopen* to control the parameters. You can also hold *FMmove* and press *fire* to toggle through different presets of the FM synthesis. Press *SHIFT R* to make the parameters shift randomly and *SHIFT M* to make adjustments manually. The horizontal slider allows you to send the re-synthesis signal only to convolution1 or 2 or to both. The amplitude of the white noise is mapped to midi controller number 5 and the amplitude of the FM synthesis is mapped to controller number 12. Amplitudes of the clicker synth are mapped onto controller numbers 6 and 11.

By holding down the FIRE button on your stick, the click synthesizer will come into play. This sends a harsh audio click into the filter envelope and the rate of the clicks is adjusted with the X,Y positions of the stick.

The Spectral Tourist makes use of the following third party externals

From the Real Time Composition Library vs. 3.3
 © 1993-2000 by Karlheinz Essl <essl@eunet.at>

Round

From the "jimmies" by Zack Settel, © 1994-98 IRCAM.

Scale

Db1

From Timothy Place - tap.tools 1.3

tap.split~ © Timothy Place

Adam Schabtach

Input Sprocket object version 1.0

The Spectral Tourist

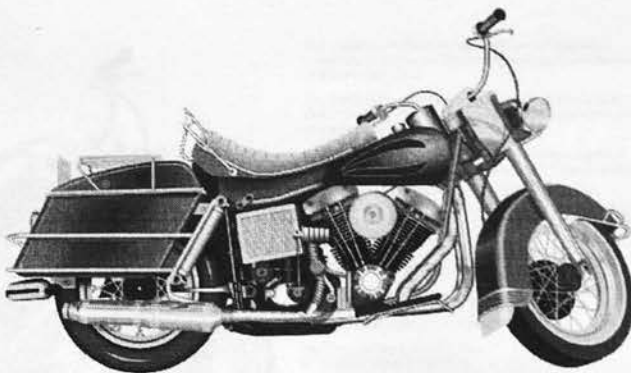
Audio CD Duration 29.10

The eight tracks on this short CD represent some of the possibilities for performing solos with the *Spectral Tourist*. Each track was recorded in one take travelling through spectrograms that were generated from sound files stored on my laptop hard disk. Of course, the *Spectral Tourist* is not limited to solos and it is just as possible to work with a live musician.

The tracks play well together and they are best considered as a complete whole.

The Spectral Tourist: Volume I, June 2003 © Martin Parker 2003, All rights reserved

1.	<i>A word from the composer</i>	02.06
2.	<i>Frank London's Klezmer All Stars (a)</i>	03.05
3.	<i>A shapely Buffer~</i>	03.45
4.	<i>J.S.Bach, 1st Prelude, Book 1 (a)</i>	01.11
5.	<i>Frank London's Klezmer All Stars (b)</i>	04.51
6.	<i>Another word from the composer</i>	01.54
7.	<i>J.S.Bach, 1st Prelude, Book 1 (b)</i>	02.39
8.	<i>Anton Webern, Lansammer Satz</i>	09.31
	Total playing time	29.10



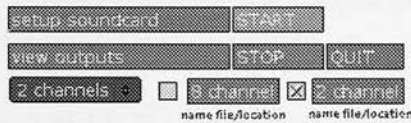
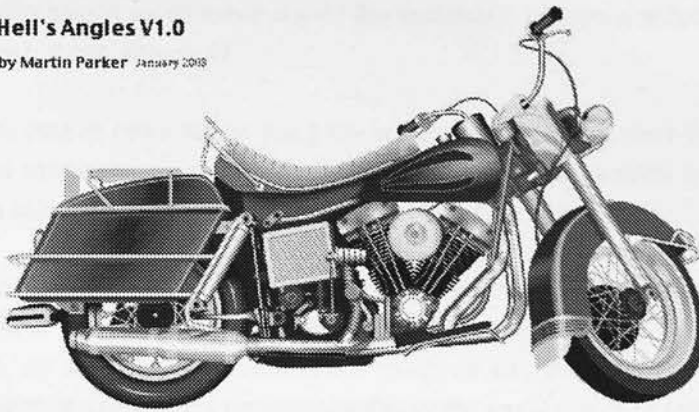
Hell's Angles [sic]

Generative software for Macintosh computer running OS9.1 or .2
Martin Parker January 2003

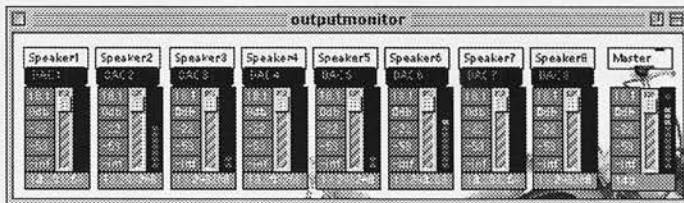


Hell's Angles V1.0

by Martin Parker January 2003



Click start when you want to start the sound and stop when you have had enough. The computer will stop of its own accord once you have clicked stop but it may take a minute or so



Hell's Angles is a piece of sound software for Macintosh Computer, running on a future versions may be available for osX and windows PC

Emulating the sound of motorbikes, computerised machines race around your head. This is best experienced within an 8 channel speaker setup.

However it can be enjoyed in stereo by configuring the 8 outputs in the soundcard setup dialogue to output 1 and 2

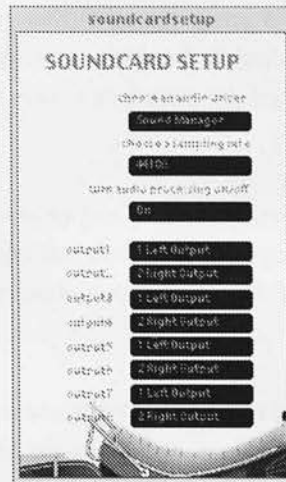
This software should work with any ASIO compatible soundcard and with the apple sound manager. Simply place a copy of your sound card's asio drivers in the asio drivers folder and the card should be recognised

Please report bugs and other problems/suggestions to Martin Parker mp@tinpark.com

(C) Martin Parker Jan 2003

<http://www.tinpark.com>

Hell's Angles was first performed in Belfast on January 20th 2003



Hell's Angles [sic.] by Martin Parker Jan 2003.

I had been reading Hunter S. Thompson's *Hell's Angels*, a book of gonzo journalism in which Thompson describes his lunatic experiences as an honorary Hell's Angel in late 1960's California.¹ At the same time, I was looking into a subject for a computer-generated sound piece and the idea of a work in which a squad of motorbikes careen across and around the audience seemed like an enjoyable challenge.

Just like the real Hell's Angels, *Hell's Angles* [sic.] is a law unto itself. It was created as a piece of software, which can be performed by any compatible Macintosh computer running OS 9.1 or 9.2. What *Hell's Angles* [sic.] lacks is human control and decision-making processes while the computer is playing; the whole event is sequenced and synthesised by machine. This is a different approach from the other works in this portfolio where careful performance *with* the computer is expected.

Why is this piece here? What does it represent?

In many respects, this piece belongs to the 50 year old tradition of 'tape' music performance where the audience is enveloped in a multi-loudspeaker set up and the material is fixed on tape or CD, to be performed via diffusion to the loudspeakers. Although *Hell's Angles* [sic.] acknowledges its roots, the work reacts against some of the problems this genre has created for composers and audiences. It also inspires some questions which might become significant as computers grow to play a substantial role in live sound performance and sound installation. Some of these problems are outlined below;

¹ *Hell's Angels*, (1970) Penguin Essentials Edition, (1999) Penguin books, London.
Submitted in part satisfaction of the requirements for the degree of PhD at the University of Edinburgh 2003

1 – Why should sound move around the audience? Is there a musical, narrative or psycho-acoustical reason? If not, why do it?

In the case of Hell's Angles [sic.] the actual material of the piece is generated by a consideration of sound and its movement in space. The work is a deliberate study in the sonic phenomena that occur when sound moves.

2- How can a stereo sound source, created in a stereo studio with one sweet spot sound anything like the same when presented in a multi-speaker sound environment? If one accepts that this is not the same, by moving sound around the space, is one trying to create multiple sweet spots for the audience to average out the complexities of the environment to present an augmented stereo/studio effect or is one trying to make a unique performance by moving sound around and exploring how this sounds within a particular space?

Although limited to a maximum of 8 individual sound channels, Hell's Angles [sic.] can be configured to play with any number of sound channels up to 8. The piece can cope in a conventional 8 channel setting with the speakers around the audience but this work has been performed with the audience wrapped around eight loudspeakers in a 'racetrack' setting.

3 - If the challenge is to perform music uniquely in each space, why are loudspeakers so often placed with a stereo bias and not put in places such as alcoves with strong resonant frequencies, up in ceilings, under the audience, next to objects in the space that rattle and hum and outside the space so that the music actually plays the room and is *genuinely* engineered for it?

Hell's Angles [sic.] was not created in the studio but as a piece for performance in a real space. The nature of the sound means that the idea of a sweet spot is ridiculous. It moves away from the concept of a complete, definitive and fixed sound piece to something that is flexible and can be incorporated into almost any performance situation with up to eight amplified sound channels.² Another situation for Hell's Angles [sic.] is the placement of loudspeakers in multiple rooms of a space. In this way, the bikes roam from room to room and involve a whole building in the performance. Perhaps this is something that could be explored in more detail by other composers of multi-channel sound works.

4 – What does the audience hear when a composer has manipulated pre-recorded sounds inside the computer - the composer's musicality realised through the careful treatment of concrete sounds or the algorithms/techniques that actually manipulate the audio?³ Where is the boundary between computer audio technique and composer's own sound?

In Hell's Angles [sic.] the sonic material and the technique are the same thing. Techniques such as Doppler shift, comb filtering and statistical data manipulation are what you hear. The piece celebrates the system that has been used to make it.

5 – If a computer is generating the music, should it be musical?

As mentioned above, there is a challenge to writing a piece of music for the computer to play. However, Hell's Angles [sic.] is conspicuously not organised with algorithms optimised for musical

² The number 8 is arbitrarily based on technological limitations of most commercial sound cards – this was not a significant consideration in the creation of the piece.

³ Algorithms might be created by the composer herself or by other software engineers

applications such as Markov chains. Why should one write music for computer and expect to have the same experience as conventional concert music?

6 – in concerts of 'fixed' music on tape or CD, where is the danger?

We feel something in concerts where live performers make the music for us live on stage. It is a tremendous and personal thrill. *Hell's Angles* [sic.] has no live performer to get this energy from however, two things make this piece exciting. Firstly the fact that computer is generating this music live is interesting for people living in our time. It is certain that the piece will be different next time it is played and might be less interesting or more interesting for us to listen to, there are not guarantees with this piece. Secondly, the duration is not defined in the way that a CD is. A human must stop the piece and this is curiously exciting in performance – how will one decide that enough is enough?

How is Hell's Angels constructed?

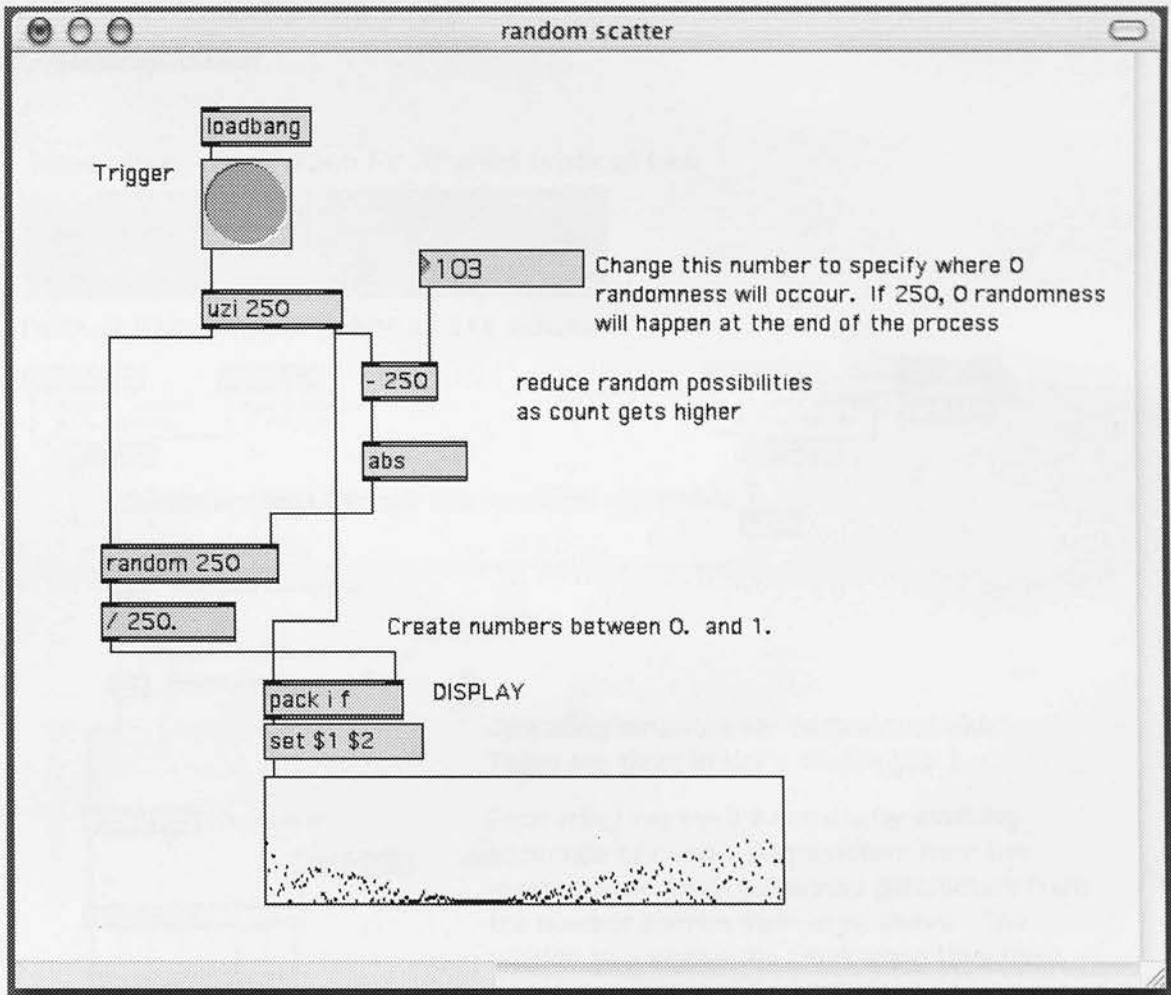
Hell's Angles [sic.] is designed to keep the computer busy by analysing its current position and modulating future tasks according to what is happening in the present. Inside the computer's 'brain' are three virtual 'bikes', each with the same range of possibilities: to stay fixed in one place and rev the engine, to tick-over, to make journeys within in eight channel speaker system or to travel with some extreme Doppler effects. There are also several possibilities for the kind of 'bike' that will perform these actions ranging from a typical computerised sound to more realistic synthesis of a motorbike. The macro structure of the work will usually be similar on each play through but the micro details and mid and short-term events cannot be predicted.

To keep processor overhead to a minimum, the synthesis of motorbike sound is achieved without physical modelling but with wave-table synthesis techniques and small amounts of effect processing; there are no motorbike samples.

Multi-channel diffusion is achieved with the help of IRCAM's SPAT~ external *panr8*~. While this object is able to diffuse a source with even power distribution between eight loudspeakers, the object does not implement any of the special techniques devised by the SPAT~ team for creating a virtual space using reverberation, equalisation and delay. Whilst it might be a great benefit to implement these strategies, the CPU overhead makes this impossible for most portable Macintosh computers at the present time (2003) and more importantly, the bikes are expected to travel around a real space, not a virtual space. Creating a virtual space for the bikes would be helpful in the circumstance of headphone listening but inside a real room, the bikes will be fine.

Random distribution:

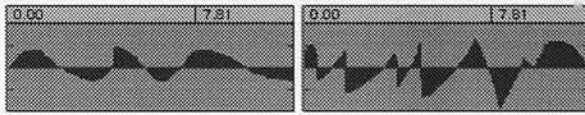
Hell's Angles [sic.] begins with all things being possible. Schrödinger's Cat is both alive and dead, but once we open the box by starting the system, a random number sequence is generated, the randomness of which converges to a specific point; 0. The initial scatter of random numbers is used throughout the piece to create more random scatters of numbers. These numbers are mapped onto all audio, temporal and spatial parameters.



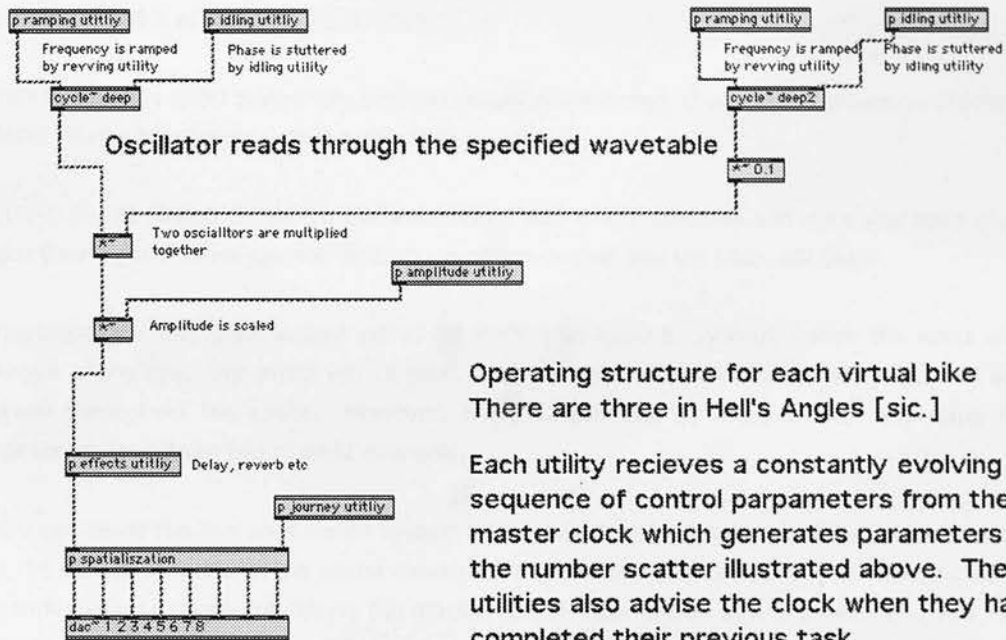
In the example above, the computer will track through this number field and when it reaches a 0 point on the X axis, a 'phrase' is considered over and another number field can be generated or other actions can be allowed such as the introduction of another motorbike. The number box with 103 in the example should be plugged into a variable number outlet from one of the scatter databases.

Wavetable synthesis:

Wave tables - Hand drawn for different types of bike



DEEP.aif 512 samples DEEP2.aif 512 samples



Operating structure for each virtual bike
There are three in Hell's Angles [sic.]

Each utility receives a constantly evolving sequence of control parameters from the master clock which generates parameters from the number scatter illustrated above. The utilities also advise the clock when they have completed their previous task

The diagram above broadly illustrates the signal flow of operations for each virtual bike. The actual structure of the software is more complicated than this diagram suggests but it is not so easy on the eye.

Because of the weighted random scatter, Hell's angles will often focus on certain areas of sound phenomena for some time, such as the feedback delay sounds that seem always to occur around the 5 minute mark. You will also notice that the piece always begins with a solo motobike and the other bikes slowly appear in different speakers. This is fixed in such a way because the first random scatter of numbers always has the same initialisation parameters. This is why the software should always be quit (apple + Q) and restarted before each performance.

Technical notes:

Hell's Angles [sic] is an eight-channel piece of software for Power Macintosh computer running os9.1 or .2

Absolute minimum processor speed is recommended at G3 500mhz.

System requirements are 5mb of disk space and a minimum of 64mb RAM.

***THIS SOFTWARE MAY RUN IN THE CLASSIC ENVIRONMENT. There are no plans to produce a version for OS X at this time (June 2003).

This software is ASIO compatible and you should place a copy of your ASIO drivers in the folder called ASIO drivers that comes with the distribution.

It is a simple matter to set-up the sound card with in the software and once you have plugged this into your eight-channel speaker system simply press start and the bikes will begin.

The sound is best experienced within an 8-channel speaker system, hence the word *Angles*, not Angels in the title. The effect will be most exaggerated if the loudspeakers are positioned at different levels throughout the space. However, *Hell's Angles* can be enjoyed with any other numbered speaker system from two to eight channels.

You can easily run this on a stereo system by routing all outputs to 1 and 2 on your sound card. This is the default set-up with the sound manager, which means you can listen with headphones. There is a wide dynamic range but setting the master output fader to 0db should be enough. Any louder may result in unwanted distortion of the output.

If you have a fast disk you can also make 8 or 2 channel sound recordings. This is however an unnecessary facility because the piece can simply be restarted.

For best results QUIT the application (apple+Q) and restart for each new presentation.

Recommended duration is around 7-10 minutes but this is totally up to you.

The software was developed in the max/msp environment (<http://www.cycling74.com>) and made use of some third party externals.

These include:

From the Real Time Composition Library vs. 3.3
© 1993-2000 by Karlheinz Essl <essl@eunet.at>
Patcher :RTC:Toolbox:reanimate
Patcher :RTC:Chance:brownian

From the "jimmies" by Zack Settel, © 1994-98 IRCAM.
External :jimmies:scale – NOW part of the standard max distribution.
Patcher :jimmies:db1

From the Spat-2.2.0: IRCAM (Sept 2001) MAX-MSP Version

Patcher :spat~:lib2.2.0-forum:lib_patches:panr8~
Patcher :spat~:lib2.2.0-forum:3D_lib:3Dcompatibility:panc
Patcher :spat~:lib2.2.0-forum:lib_patches:az_convert
Patcher :spat~:lib2.2.0-forum:lib_patches:mod
Patcher :spat~:lib2.2.0-forum:lib_patches:Spat-x.x
Patcher :spat~:lib2.2.0-forum:3D_lib:3Dcompatibility:pan-
Patcher :spat~:lib2.2.0-forum:lib_patches:speedlim2
External :spat~:lib2.2.0-forum:lib_patches:pw~
Patcher :spat~:lib2.2.0-forum:lib_patches:panr8
Patcher :spat~:lib2.2.0-forum:lib_patches:panm3
Patcher :spat~:lib2.2.0-forum:lib_patches:panr6
Patcher :spat~:lib2.2.0-forum:lib_patches:panr4
Patcher :spat~:lib2.2.0-forum:lib_patches:panl2

The University of Edinburgh has permission to include these objects in Standalone applications for the purposes of documentation for PhD. Further distribution of this standalone is not permitted. Please contact Martin Parker for permission. mp@tinpark.com

HAZE ver.1
for computer with Clarinet in *Bb*, Tenor Trombone and Cello
Duration ca 5 minutes

Martin Parker
October 2002



Structure of the software:

The unknowable - predictable system

Like most of the software in this portfolio where systems are devised that can cope with different types of input, *HAZE* is not fixed. Experimentation with different instruments and players from different backgrounds is welcomed and desirable. If for example, three instrumental improvisers are playing the software, the computer operator should be an improviser also. Where following a score, a conductor should operate the computer.

Haze is a reactive performance system and was created with unknowable attitude to short-term events but the broader structure is predictable and reliable. A set of zones lettered A-L are defined and selectable by mouse click. Each zone triggers a set of presets which define limitations that are mapped onto a set of oscillating phasor~ and cycle~ objects which feed some comb filters. Comb filter parameters such as centre frequency, Q factor, feedback and feed forward coefficients are modulated by line ramps, which are in turn controlled by live input.

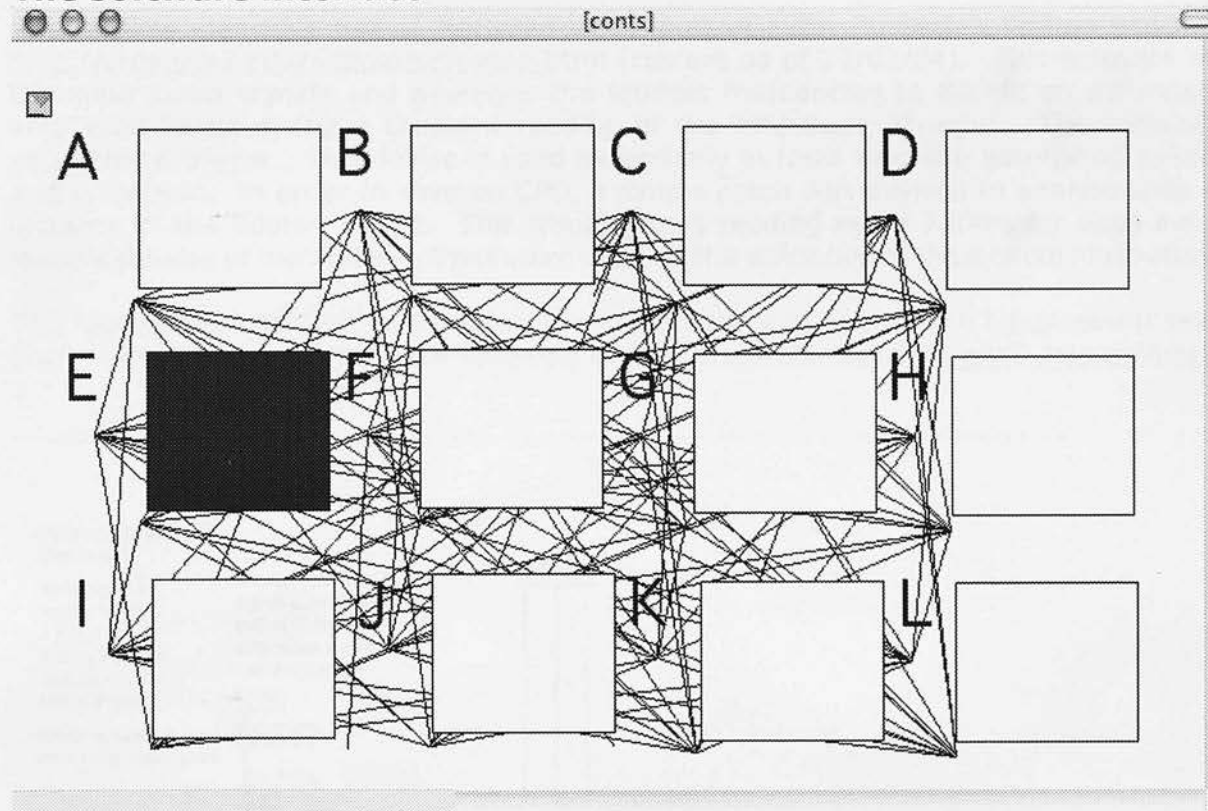
Depending upon which zone is being used, the mapping of pitch and amplitude analysis to the fundamental frequency of an oscillator and its volume is non-linear. A performer therefore will be sure that something will happen if they play at a certain volume above a certain pitch but the reaction of the computer may not always be to play the same pitch back. It may start on the same pitch and quickly run away from it or it might try to search that pitch out, only finding it some time after the pitch it was looking for has changed. This system of chasing and randomly generating lines, triggered by input can give a sense of instrumental 'life' to the computer which feels like it is linked to the live instruments in some way but has an attitude to material that is its own.

Below is a screen shot of some of the simple parameters that are generated when Haze receives input. One trigger generates a ramping line with several randomly generated points on the line. The limits of the points are chosen so that they do not exceed restrictions that were decided upon during the composition of the software.

Description of each Zone:

ZONE	LIVE input	COMPUTER output
A	Loud impulses from all three players	Long held pitches with reasonably quick decay and ascending or descending pitch character
B	High pitches in part 1 are frozen and amplitude should fluctuate. Instruments 2 and 3 behave as Zone A	Pitch is followed and amplitude is mapped to feedback delay coefficient
C	Long notes with colouration and sudden, detectable attacks. Does not need to be loud.	Long shimmering textures that respond to pitch but also to attacks from live input. These refresh oscillators, which make long, randomised modulating lines.
D	Input as Zone A	Behaviour is similar to Zone A, but the duration of notes is shorter.
E	Solo for instrument 3. Can involve glissando to match computer part but this is not necessary.	Glissandos and slippery movement based on amplitude and pitch of input – very sensitive to input.
F	Instruments 1 and 2 give short scattered bursts of loud, high-pitched material.	Reacts to some of the input but not all. Computer chooses to ignore some of the notes. The notes are ignored randomly based on the number of triggers detected. There will be no more than 10 notes before the next computer reaction in either part.
G	As above but including instrument 3.	As above but including input from instrument 3.
H	Instruments 2 and 3 as Zone C. Instrument 1 smooth scalar patterns, very quiet.	Pitch controls pan position between four speakers. Pitch also controls centre frequency of a white noise filter.
I	Instruments 1 and 3 as per Zone C Instrument 2 behaves much like instrument 3 in Zone E, glissandi and short attacks.	Computer behaves as Zone C for inputs 1 and 3. Accents from input 2 trigger new oscillator frequencies around detected pitches but not exactly the same pitch.
J	As Zone A	As Zone A
K		Not implemented in current version of software
L		Not implemented in current version of software

The software interface

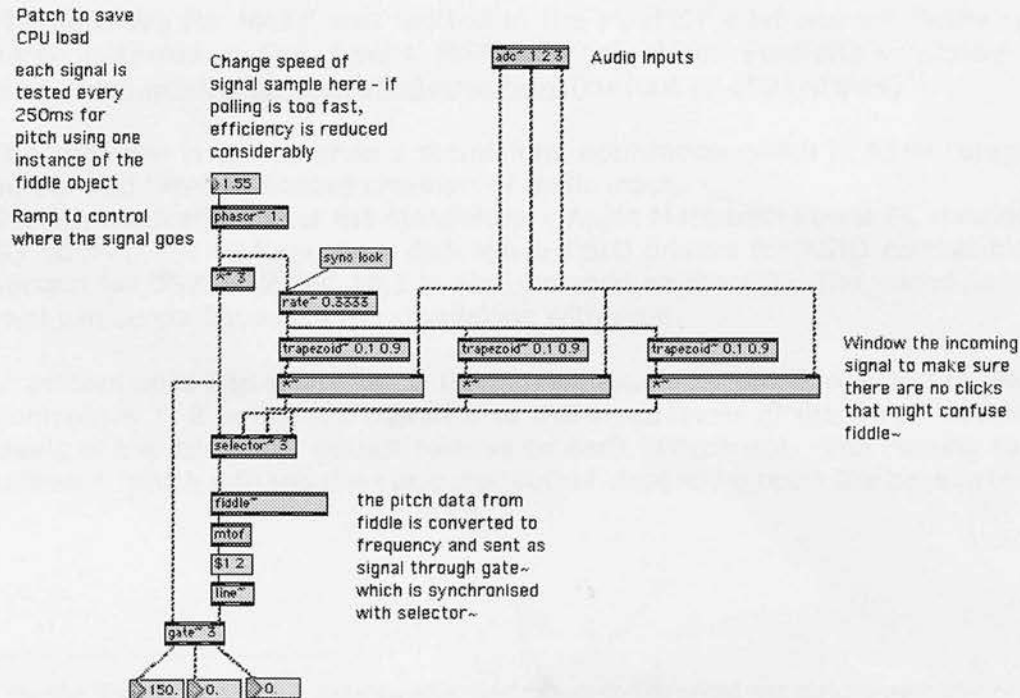


The Haze software interface is crude but effective. To rehearse in a different zone with a score, simply click the mouse in the corresponding box. The other zones automatically switch to the correct presets for that zone. Rather than smoothing between different zones, this is an abrupt switch from one level of computer responsiveness to another. There will be no clicks in the digital signal processing when the change is made but there might be a more sudden change in some parts compared with others.

Pitch and amplitude analysis

Haze makes extensive use of Ted Apel's MSP port of Miller Puckette's fiddle~ which is downloadable from the following site: <http://crca.ucsd.edu/~tapel/software.html> (current as of 21/03/04). This software makes Fast Fourier Transform analysis of incoming audio signals and averages the loudest frequencies to decide on a fundamental pitch. The software also tracks amplitude levels giving a constant reading of the amplitude of input. The software also detects peaks in the signal and generates a trigger. This device is used extensively in Haze to cause associated events based on other input factors like pitch and amplitude. In order to save on CPU, a simple patch was devised to analyse data from the three instruments by using one instance of the fiddle~ object. This would give a reading every 750ms for each instrument. In the final software however, three instances of the fiddle~ object were used as the efficiency of the system illustrated below was not accurate enough.

This clumsy work is seen as being no longer necessary in light of the latest power books and Tristan Jehan's highly optimised Pitch~ object (available from the following URL: <http://web.media.mit.edu/~tristan/maxmsp.html>).



HAZE ver.1

Reactive music for computer with Clarinet in Bb, Tenor Trombone and Cello
Duration ca 5 minutes

Martin Parker
October 2002

All players to play from an enlarged score
Clarinet in Bb on the score.

HAZE was written for members of the Paragon Ensemble and computer. Rather than interactive, *HAZE* is reactive. Essentially, the role of the live performers is to trigger computer based sound synthesis. The computer listens for pitch and amplitude data a re-maps this onto synthesis parameters.

This version was prepared to open a concert and was created to be punchy and brief. The score was used as a very literal guide for the performers who found it useful to follow because of very restricted rehearsal time.

The software for *HAZE* was written in the MaxMSP environment (www.cycling74.com) and makes use of the following third party external : Ted Apel's MSP port of Miller Puckette's fiddle~ which is downloadable from the following site: <http://crca.ucsd.edu/~tapel/software.html> (current as of 21/03/04).

The software is compiled as a standalone application which is ASIO compatible and requires four dedicated channels of audio output and three dedicated channels of audio input.

System requirements for the standalone – Apple Macintosh Power PC running OS 9.1 or 9.2.

G3 500Mhz, 64Mb Ram, 5mb disk space ASIO drivers for ASIO compatible sound card to be placed in ASIO drivers folder. A version for OSX 10.2 and 10.3 is also included on the CD. The sound card should be Core-Audio and Core-Midi compatible the card can be configured in the standalone with ease.

In performance and rehearsal, a 16 channel midi fader box is required to take care of the input and output signals.

Controllers 1, 2 and 3 are assigned to the input levels of the three instruments and channels 14, 15 and 16 control the three levels of the computer output relative to each instrument. The routing to the four¹ or two loudspeakers is undertaken by the software, which diffuses the computer output depending upon the parameters that the computer receives from live input.

¹ For the first performance, a quadraphonic system was implemented and players were able to move sound around the space – this was largely dependent on the pitch of the input. However, *HAZE* does not require a four channel speaker arrangement, it can be performed in stereo; simply re-route the odd numbered outputs to channel 1 and the even numbered outputs to channel 2.

HAZE

Reactive music for computer, clarinet, trombone and cello
Written for the Paragon Ensemble OCTOBER 2002

Martin Parker
October 2002
duration, ca. 5'20

A

Without time sig or tempo ♩=90 Without time sig or tempo

Bb Clarinet

computer fades clarinet leads

sffz

Tenor Trombone

muted (harmon) computer fades clarinet leads

f *ff* *f*

Cello

pizz computer fades clarinet leads

sffz

B

7 ^{long} computer responds to amplitude

keeping soft dynamic play with computer *fpp* < < < < < > sim. *fpp* < < < < < > keeping soft dynamic play with computer

Bb Cl.

computer fades

T. Tbn.

Vc. directs next entry *f* computer fades *get cup*

Vlc.

Vc. directs next entry *ff* *ff* computer fades *arco.*

C

accel. poco a poco

12

Bb Cl. *pp*

(accents refresh oscillators)
use amplitude to control computer
articulate (flutter/breath/tongue)
in response to the computer

T. Tbn. *pp*

(accents refresh oscillators)
use amplitude to control computer
articulate (flutter/muting/tongue)
in response to the computer

cup mute

accel. poco a poco

Vlc. *pp*

(accents refresh oscillators)
use amplitude to control computer
articulate (trem/pont/etc.)
in response to the computer

sul pont.

accel. poco a poco

28

Bb Cl. *pp*

Vc. directs next entry

sub.

T. Tbn. *pp*

Vc. directs next entry

sub.

Vlc. *pp*

Vc. directs next entry

Without time sig but with a fast feel

E

29 **D** computer fades *sfz* scatter of notes, play until you trigger computer cello solo computer fades

Bb Cl.

T. Tbn. computer fades straight mute *f* scatter of notes, play until you trigger computer cello solo computer fades

Vlc. pizz *sfz* arco. slippery... *f* *alleg.* amplitude has some effect on 'slipperiness' of the computer

35

Bb Cl.

T. Tbn.

Vlc. ...continue improvising with the computer clarinet leads in next section

free scatter, no tempo, no time

F

computer reacts to pitch data and note duration but not every instance

36

Bb Cl. free scatter, no tempo, no time computer reacts to pitch data and note duration but not every instance

T. Tbn. free scatter, no tempo, no time computer reacts to pitch data and note duration but not every instance

G clarinet leads in

48

Bb Cl. *f*

T. Tbn. *f* clarinet leads in

Vlc. *ffz* pizz. *sim.* arco. pizz. *sim.* arco.

*free scatter, no tempo, no time
computer reacts to pitch data and note duration but not every instance*

SLOW DOWN

43

Bb Cl. clarinet directs cutoff

T. Tbn. clarinet directs cutoff

Vlc. clarinet directs cutoff

H

pitch region controls diffusion of computer sound. low sounds to the left front,
mid sounds to the right and mid high sounds to right back high sounds to the left back

47

Bb Cl. *ppp*

T. Tbn. *pp*

Vlc. *pp*

cup mute
use amplitude to control computer
articulate (flutter/mute/tongue)
in response to the computer

(accents refresh oscillators)

gliss.

sul pont.

use amplitude to control computer
articulate (trem/pont/etc.)
in response to the computer

(accents refresh oscillators)

explore the computer, move the sound around the space
refresh oscillators with accents

pitch region controls diffusion of computer sound. low sounds to the left front,
mid sounds to the right and mid high sounds to right back high sounds to the left back

50

Bb Cl. *ppp*

T. Tbn. *ppp*

Vlc. *ppp*

wait for texture to clear before refreshing computer

harmon mute

wait for texture to clear before refreshing computer

Environment for Stone Violin and Computer
duration max. 15minutes

Martin Parker
September 2002

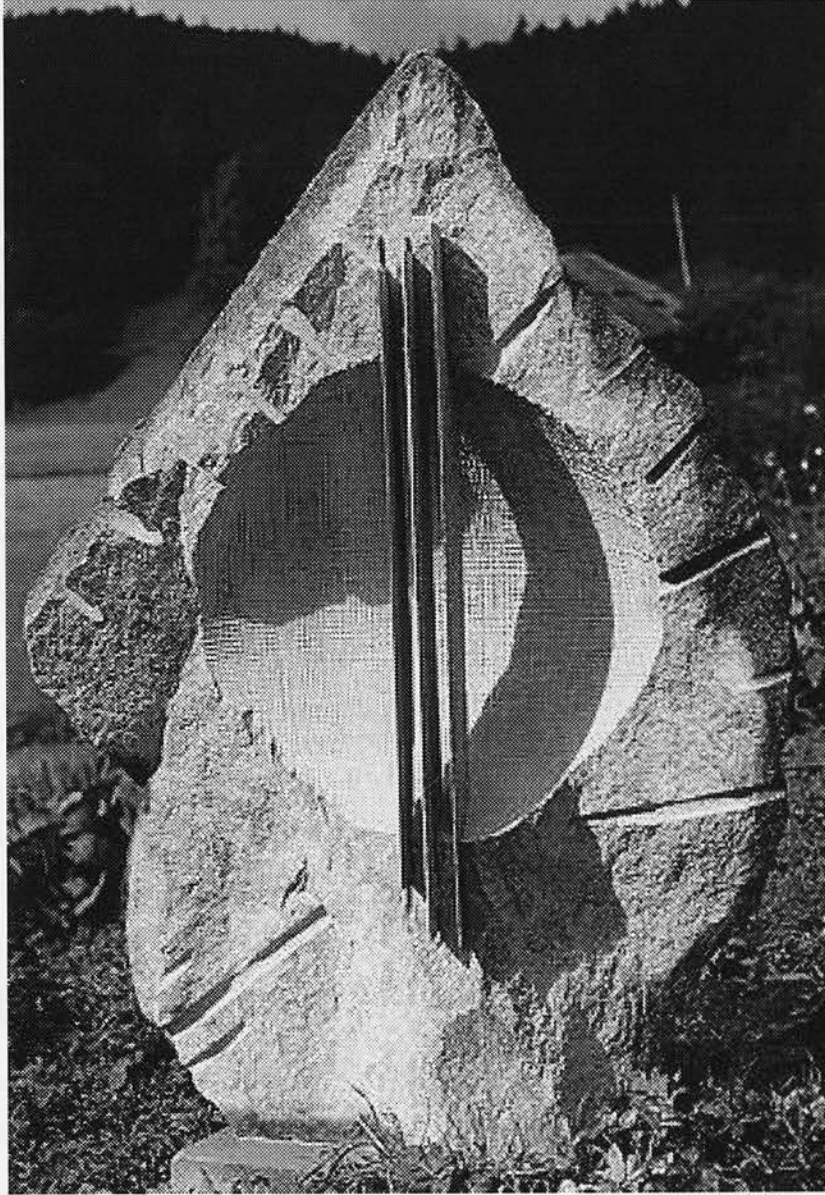


Photo by Christian Unterhuber



Environment for Stone Violin and Computer
duration max. 15 minutes

Martin Parker
September 2002

The stone instruments of Kassian Erhard spend most of the year in the Austrian Alps in a small village called Pillar near to the Italian border. On the mountainside Erhard designs stone 'instruments' including interpretations of trombones, saxophones, percussion and strings all carved from the indigenous rock.

During the late summer of 2002, I was fortunate to spend three weeks living with the sculptor and his family and had the opportunity to write some music for his instruments. Of all the sculptures in his garden, the piece that attracted my ears and eyes the most was his stone violin. Not only the body of the instrument but the strings and bow are carved from stone. The instrument's response depends upon the type of stone used to make bow and string.

A gentle scrape of stone against stone reveals tones that are essentially inharmonic, scratchy and multiphonic; all rich in potential for analysis within the computer.

The performance environment I wrote for this piece is based around Miller Puckette's *fiddle~* v1.1 object for Max MSP and a bank of sinewave oscillators. The incoming sound from the violin is analysed for its pitch and amplitude content using *fiddle~*. This data is fed sequentially to the oscillators that 'resonate' the primary pitch content of the violin. The result is purity from the computer contrasted with impurity from the instrument.

Environment is essentially an improvisation for a performer experienced in the various techniques of playing the instrument and should last from five to 15 minutes. Various settings in the software can be explored during rehearsal and in performance.

Environment for Stone Violin by Martin Parker
September 2002

System Requirements:

Apple Mac os9.1 or .2
Min 64 mb RAM
5mb Disk space, plus more if you want to record to disk
Min 500 mhz G3 processor

ASIO compatible sound card or apple sound manager. Place ASIO drivers inside the ASIO drivers folder before installation.

Alternatively:

Apple Mac osX 10.2 or 10.3 with a core audio compatible sound card and a minimum of 128 mb RAM.

To run this software, simply double click on the application and it should load with no errors in the logging window (view with apple+M).

This software was built in the MAX MSP programming language using the standard distribution and two third party externals:

fiddle~ v.1.1 by Miller Puckette. Downloadable here:
<http://crca.ucsd.edu/~tapel/software.html> (current 21/03/04)

OSX version uses Tristan Jehan's pitch~ external. Downloadable here:
<http://web.media.mit.edu/~tristan/MaxMSP> (current 07/04/04)

Environment for Stone Violin

environment: *n.* **1.** external conditions or surroundings. **2.** *Ecology.* The external surroundings in which a plant or animal lives, which influence its development and behaviour. **3.** the state of being envired.¹

The word environment suggests limitations; it connotes a finite space, a situation in which one is ideally (or not) suited to maximise the opportunities on offer. Depending upon who or what you are, an environment can be easy or difficult to explore, its proportions binding or beyond reach.

The concept of an environment is central to almost all the work in this portfolio. An environment might be considered a list of instructions, a computer programme, a score, a CD track, an image source, an instrumental preparation or simply a situation that is unlikely to change massively. The environment cannot modulate much but the oscillations within its confines are subject to many freedoms and explorations.

In the case of the *Environment for Stone Violin*, the instrument imposed specific limitations at the very beginning of the project. As the attached recordings illustrate, there is a 'limit' to the range of sounds that can be garnered from simply scraping two pieces of stone together.

The idea of composing a score for the instrument was not attractive. After many hours rehearsing with the instrument, it became clear that there were no reliable means of generating repeatable, stable sounds. Rather than create a list of gestures that would make a structure for the performer, I decided to explore the potential for a study of the instrument's sonic qualities by imposing a similarly limited computer environment within which to perform. The combination of these two limitations might add up to something greater than the sum of their parts and create a structure in themselves.

Despite the limited range of sound offered by the stone violin, there is a wonderfully rich harmonic spectra; scraping two stones together can unveil a wealth of pitch-based information which is easily extractable using Fast Fourier Transform techniques. Millar Puckett's Fiddle~ object, (downloadable here: <http://crca.ucsd.edu/~tapel/software.html> (current 21/03/04)), provides a reliable way in which to extract pitch and amplitude resources from live audio signals.

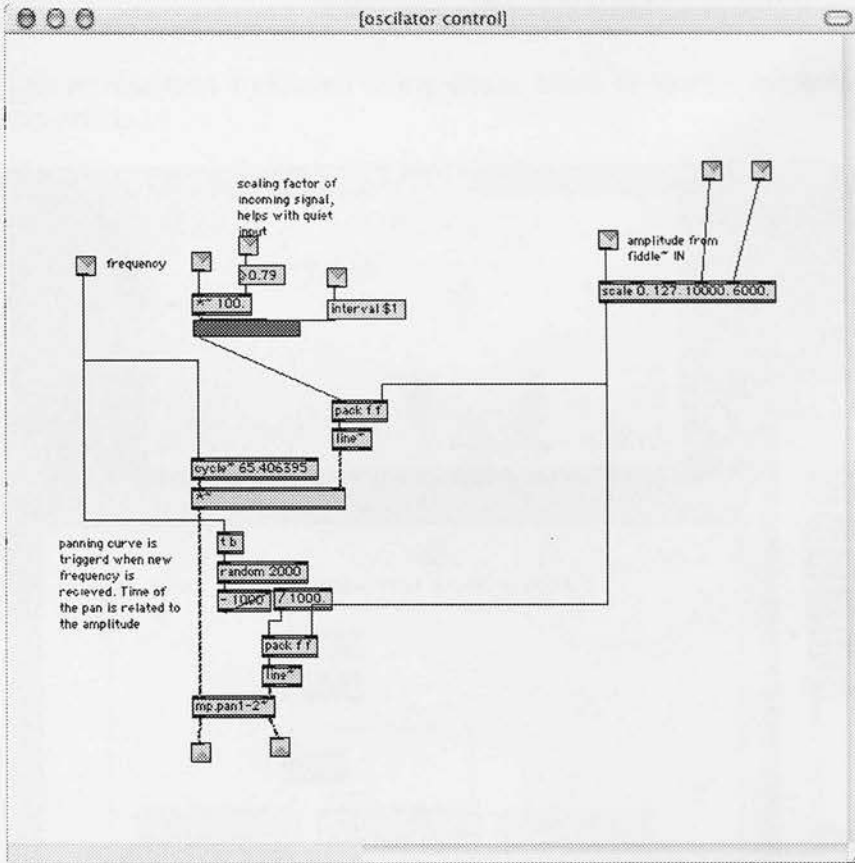
How the software works

The computer software that accompanies an improvisation with the stone violin is very simple. Each time a pitch is detected, its value is stored and sent to a sine wave oscillator. When a new pitch is detected, the number is sent to another oscillator and so on until 10 oscillators have been sent a pitch. The process then repeats.² The effect this has is to create a haze of pitch information within the computer part that is made up of pure tones extracted from the incoming 'noise'. The summation of these sine waves, all at slightly different amplitudes, has the effect of creating a new 'noise' which is not at all dissimilar to the sound one can generate using additive synthesis techniques.

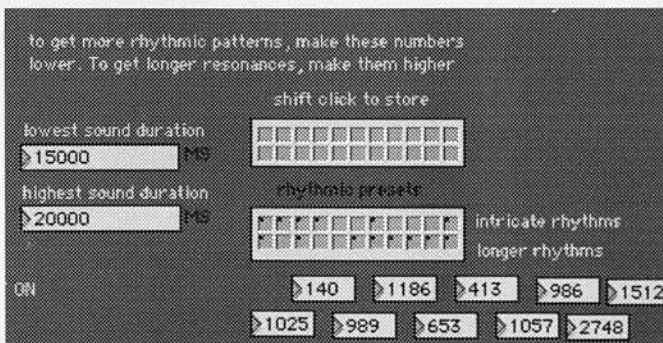
¹ Collins Concise Dictionary, 1990. Collins, London.

² Pitch detection is very difficult for low frequencies and in order to give a more solid and rewarding sound from the computer, two of the oscillators are dropped by an octave. This small change made an enormous difference to the computer presence in performance.

In order to keep the computer environment alive in its own right, a number of strategies have been employed to deal with the amplitude of the bank of oscillators. The computer is sensitive to the amplitude of the incoming signal and this is mapped onto each sine wave simultaneously:



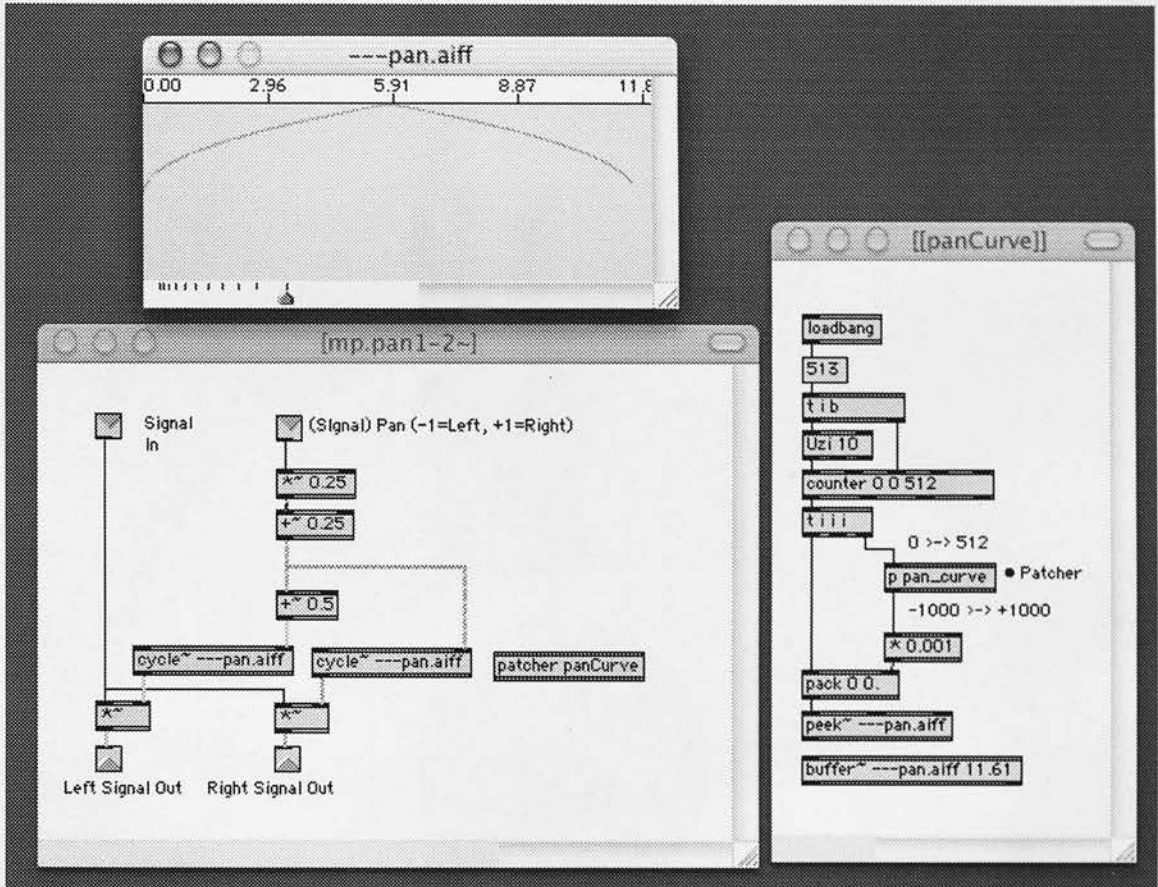
Sensitive performance of the computer part is necessary for the piece to work correctly. The sine waves have a set of preset durations which can be defined by the computer performer. These presets specify a minimum and maximum average duration for each sine wave. When these presets are selected, the computer operator can occasionally fade out the live input and the computer will sustain the tone for the duration selected. This simple operation helps to give the stone violin performer a break and also offers a chance for the audience to hear the computer's response to incoming sound more clearly.



A final element programmed into the environment is spatial control over each oscillator. The time it takes for an oscillator to make a journey from wherever (randomly chosen) to wherever (randomly chosen) between two speakers is a function of the amplitude of the incoming signal.

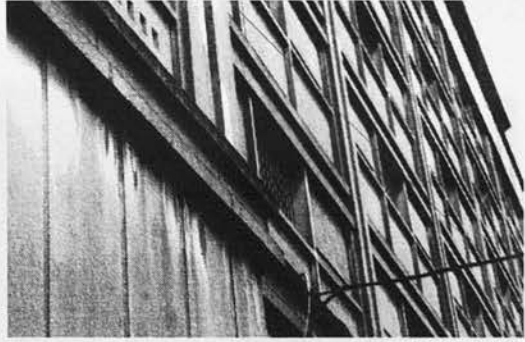
The method for achieving equal power panning is clearly explained in the MaxMSP distribution *Examples* folder, downloadable here: <http://www.cycling74.com/products/dlmaxmspmac.html>

The abstraction I created using these ideas is illustrated below and is known as mp.pan1-2~.



As with *HAZE* (2002), experimentation with other input is welcomed and encouraged.

Beyond the Stone Violin, experiments have been made with a Viola da Gamba and this has produced pleasing results. Other interesting things happen using room resonances and discrete sonic events to provide feedback to the pitch detector.

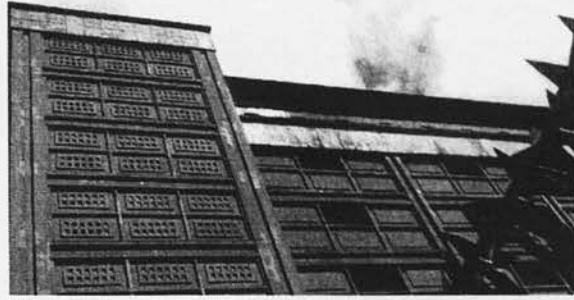
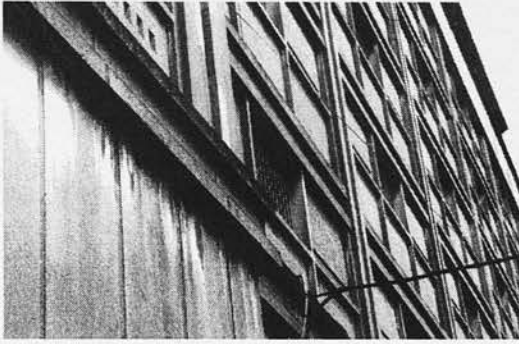


THE VIEW
DVD VIDEO
duration 12.18

Martin Parker
February 2002



The View 2002 (DVD video)



The View was filmed on location at an industrial site near Murrayfield in Edinburgh. The visual subject of the film is a monolithic building that is used to store alcohol before it is registered for tax. At its location near other industrial buildings, shopping, residential and countryside areas, the dark walls covered in lichen and the residue of thirty years rain, the building emanates an awesome, awkward presence and it is in some ways unfortunate that it is scheduled for demolition at the end of 2003.

However, *The View* is not a work about the location, state or purpose of the building, nor a social comment or historical documentary; instead it is piece of video music that uses the building as an abstract visual starting point for an exploration of some dynamics between sound and image.

Rather like concrete music, where sound is manipulated in the studio to form a composition, here a sequence of photographs of the building's walls have been processed to enhance and exaggerate the grain of the details. The image is rarely still and the roving eye of the camera works both in counterpoint and coincidence with the sound you hear. Whilst the visuals are sourced from the real world, the sound is purely synthesized pushing the scene further into abstraction.

The video was processed using Adobe Premiere (version 6) and the audio generated in Propellerhead's REASON (version 1). All camera work and sound processing by Martin Parker 2002.

Shonky Music

for Tracker action Organs

Duration ca. 5 minutes

Martin Parker

February 20 01

Shonky Music
for Tracker action Organs
Duration ca 6 minutes

Martin Parker
February 2001

The story of the...

organ that...

the construction of...

Canon...

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Preparation of your organ is relatively simple. Copy the first line of the first line of Shonky Music and play it with only the stop of 27 notes. You may choose to restrict to the lower octaves of the organ, right to the bottom. If there is no sound at all, try pulling the stop out further. Do not get too far as to make all the notes sound. Repeat this process for the stops 11, 15, 19, 23, 27, 31, 35, 39, 43, 47, 51, 55, 59, 63, 67, 71, 75, 79, 83, 87, 91, 95, 99, 103, 107, 111, 115, 119, 123, 127, 131, 135, 139, 143, 147, 151, 155, 159, 163, 167, 171, 175, 179, 183, 187, 191, 195, 199, 203, 207, 211, 215, 219, 223, 227, 231, 235, 239, 243, 247, 251, 255, 259, 263, 267, 271, 275, 279, 283, 287, 291, 295, 299, 303, 307, 311, 315, 319, 323, 327, 331, 335, 339, 343, 347, 351, 355, 359, 363, 367, 371, 375, 379, 383, 387, 391, 395, 399, 403, 407, 411, 415, 419, 423, 427, 431, 435, 439, 443, 447, 451, 455, 459, 463, 467, 471, 475, 479, 483, 487, 491, 495, 499, 503, 507, 511, 515, 519, 523, 527, 531, 535, 539, 543, 547, 551, 555, 559, 563, 567, 571, 575, 579, 583, 587, 591, 595, 599, 603, 607, 611, 615, 619, 623, 627, 631, 635, 639, 643, 647, 651, 655, 659, 663, 667, 671, 675, 679, 683, 687, 691, 695, 699, 703, 707, 711, 715, 719, 723, 727, 731, 735, 739, 743, 747, 751, 755, 759, 763, 767, 771, 775, 779, 783, 787, 791, 795, 799, 803, 807, 811, 815, 819, 823, 827, 831, 835, 839, 843, 847, 851, 855, 859, 863, 867, 871, 875, 879, 883, 887, 891, 895, 899, 903, 907, 911, 915, 919, 923, 927, 931, 935, 939, 943, 947, 951, 955, 959, 963, 967, 971, 975, 979, 983, 987, 991, 995, 999, 1003, 1007, 1011, 1015, 1019, 1023, 1027, 1031, 1035, 1039, 1043, 1047, 1051, 1055, 1059, 1063, 1067, 1071, 1075, 1079, 1083, 1087, 1091, 1095, 1099, 1103, 1107, 1111, 1115, 1119, 1123, 1127, 1131, 1135, 1139, 1143, 1147, 1151, 1155, 1159, 1163, 1167, 1171, 1175, 1179, 1183, 1187, 1191, 1195, 1199, 1203, 1207, 1211, 1215, 1219, 1223, 1227, 1231, 1235, 1239, 1243, 1247, 1251, 1255, 1259, 1263, 1267, 1271, 1275, 1279, 1283, 1287, 1291, 1295, 1299, 1303, 1307, 1311, 1315, 1319, 1323, 1327, 1331, 1335, 1339, 1343, 1347, 1351, 1355, 1359, 1363, 1367, 1371, 1375, 1379, 1383, 1387, 1391, 1395, 1399, 1403, 1407, 1411, 1415, 1419, 1423, 1427, 1431, 1435, 1439, 1443, 1447, 1451, 1455, 1459, 1463, 1467, 1471, 1475, 1479, 1483, 1487, 1491, 1495, 1499, 1503, 1507, 1511, 1515, 1519, 1523, 1527, 1531, 1535, 1539, 1543, 1547, 1551, 1555, 1559, 1563, 1567, 1571, 1575, 1579, 1583, 1587, 1591, 1595, 1599, 1603, 1607, 1611, 1615, 1619, 1623, 1627, 1631, 1635, 1639, 1643, 1647, 1651, 1655, 1659, 1663, 1667, 1671, 1675, 1679, 1683, 1687, 1691, 1695, 1699, 1703, 1707, 1711, 1715, 1719, 1723, 1727, 1731, 1735, 1739, 1743, 1747, 1751, 1755, 1759, 1763, 1767, 1771, 1775, 1779, 1783, 1787, 1791, 1795, 1799, 1803, 1807, 1811, 1815, 1819, 1823, 1827, 1831, 1835, 1839, 1843, 1847, 1851, 1855, 1859, 1863, 1867, 1871, 1875, 1879, 1883, 1887, 1891, 1895, 1899, 1903, 1907, 1911, 1915, 1919, 1923, 1927, 1931, 1935, 1939, 1943, 1947, 1951, 1955, 1959, 1963, 1967, 1971, 1975, 1979, 1983, 1987, 1991, 1995, 1999, 2003, 2007, 2011, 2015, 2019, 2023, 2027, 2031, 2035, 2039, 2043, 2047, 2051, 2055, 2059, 2063, 2067, 2071, 2075, 2079, 2083, 2087, 2091, 2095, 2099, 2103, 2107, 2111, 2115, 2119, 2123, 2127, 2131, 2135, 2139, 2143, 2147, 2151, 2155, 2159, 2163, 2167, 2171, 2175, 2179, 2183, 2187, 2191, 2195, 2199, 2203, 2207, 2211, 2215, 2219, 2223, 2227, 2231, 2235, 2239, 2243, 2247, 2251, 2255, 2259, 2263, 2267, 2271, 2275, 2279, 2283, 2287, 2291, 2295, 2299, 2303, 2307, 2311, 2315, 2319, 2323, 2327, 2331, 2335, 2339, 2343, 2347, 2351, 2355, 2359, 2363, 2367, 2371, 2375, 2379, 2383, 2387, 2391, 2395, 2399, 2403, 2407, 2411, 2415, 2419, 2423, 2427, 2431, 2435, 2439, 2443, 2447, 2451, 2455, 2459, 2463, 2467, 2471, 2475, 2479, 2483, 2487, 2491, 2495, 2499, 2503, 2507, 2511, 2515, 2519, 2523, 2527, 2531, 2535, 2539, 2543, 2547, 2551, 2555, 2559, 2563, 2567, 2571, 2575, 2579, 2583, 2587, 2591, 2595, 2599, 2603, 2607, 2611, 2615, 2619, 2623, 2627, 2631, 2635, 2639, 2643, 2647, 2651, 2655, 2659, 2663, 2667, 2671, 2675, 2679, 2683, 2687, 2691, 2695, 2699, 2703, 2707, 2711, 2715, 2719, 2723, 2727, 2731, 2735, 2739, 2743, 2747, 2751, 2755, 2759, 2763, 2767, 2771, 2775, 2779, 2783, 2787, 2791, 2795, 2799, 2803, 2807, 2811, 2815, 2819, 2823, 2827, 2831, 2835, 2839, 2843, 2847, 2851, 2855, 2859, 2863, 2867, 2871, 2875, 2879, 2883, 2887, 2891, 2895, 2899, 2903, 2907, 2911, 2915, 2919, 2923, 2927, 2931, 2935, 2939, 2943, 2947, 2951, 2955, 2959, 2963, 2967, 2971, 2975, 2979, 2983, 2987, 2991, 2995, 2999, 3003, 3007, 3011, 3015, 3019, 3023, 3027, 3031, 3035, 3039, 3043, 3047, 3051, 3055, 3059, 3063, 3067, 3071, 3075, 3079, 3083, 3087, 3091, 3095, 3099, 3103, 3107, 3111, 3115, 3119, 3123, 3127, 3131, 3135, 3139, 3143, 3147, 3151, 3155, 3159, 3163, 3167, 3171, 3175, 3179, 3183, 3187, 3191, 3195, 3199, 3203, 3207, 3211, 3215, 3219, 3223, 3227, 3231, 3235, 3239, 3243, 3247, 3251, 3255, 3259, 3263, 3267, 3271, 3275, 3279, 3283, 3287, 3291, 3295, 3299, 3303, 3307, 3311, 3315, 3319, 3323, 3327, 3331, 3335, 3339, 3343, 3347, 3351, 3355, 3359, 3363, 3367, 3371, 3375, 3379, 3383, 3387, 3391, 3395, 3399, 3403, 3407, 3411, 3415, 3419, 3423, 3427, 3431, 3435, 3439, 3443, 3447, 3451, 3455, 3459, 3463, 3467, 3471, 3475, 3479, 3483, 3487, 3491, 3495, 3499, 3503, 3507, 3511, 3515, 3519, 3523, 3527, 3531, 3535, 3539, 3543, 3547, 3551, 3555, 3559, 3563, 3567, 3571, 3575, 3579, 3583, 3587, 3591, 3595, 3599, 3603, 3607, 3611, 3615, 3619, 3623, 3627, 3631, 3635, 3639, 3643, 3647, 3651, 3655, 3659, 3663, 3667, 3671, 3675, 3679, 3683, 3687, 3691, 3695, 3699, 3703, 3707, 3711, 3715, 3719, 3723, 3727, 3731, 3735, 3739, 3743, 3747, 3751, 3755, 3759, 3763, 3767, 3771, 3775, 3779, 3783, 3787, 3791, 3795, 3799, 3803, 3807, 3811, 3815, 3819, 3823, 3827, 3831, 3835, 3839, 3843, 3847, 3851, 3855, 3859, 3863, 3867, 3871, 3875, 3879, 3883, 3887, 3891, 3895, 3899, 3903, 3907, 3911, 3915, 3919, 3923, 3927, 3931, 3935, 3939, 3943, 3947, 3951, 3955, 3959, 3963, 3967, 3971, 3975, 3979, 3983, 3987, 3991, 3995, 3999, 4003, 4007, 4011, 4015, 4019, 4023, 4027, 4031, 4035, 4039, 4043, 4047, 4051, 4055, 4059, 4063, 4067, 4071, 4075, 4079, 4083, 4087, 4091, 4095, 4099, 4103, 4107, 4111, 4115, 4119, 4123, 4127, 4131, 4135, 4139, 4143, 4147, 4151, 4155, 4159, 4163, 4167, 4171, 4175, 4179, 4183, 4187, 4191, 4195, 4199, 4203, 4207, 4211, 4215, 4219, 4223, 4227, 4231, 4235, 4239, 4243, 4247, 4251, 4255, 4259, 4263, 4267, 4271, 4275, 4279, 4283, 4287, 4291, 4295, 4299, 4303, 4307, 4311, 4315, 4319, 4323, 4327, 4331, 4335, 4339, 4343, 4347, 4351, 4355, 4359, 4363, 4367, 4371, 4375, 4379, 4383, 4387, 4391, 4395, 4399, 4403, 4407, 4411, 4415, 4419, 4423, 4427, 4431, 4435, 4439, 4443, 4447, 4451, 4455, 4459, 4463, 4467, 4471, 4475, 4479, 4483, 4487, 4491, 4495, 4499, 4503, 4507, 4511, 4515, 4519, 4523, 4527, 4531, 4535, 4539, 4543, 4547, 4551, 4555, 4559, 4563, 4567, 4571, 4575, 4579, 4583, 4587, 4591, 4595, 4599, 4603, 4607, 4611, 4615, 4619, 4623, 4627, 4631, 4635, 4639, 4643, 4647, 4651, 4655, 4659, 4663, 4667, 4671, 4675, 4679, 4683, 4687, 4691, 4695, 4699, 4703, 4707, 4711, 4715, 4719, 4723, 4727, 4731, 4735, 4739, 4743, 4747, 4751, 4755, 4759, 4763, 4767, 4771, 4775, 4779, 4783, 4787, 4791, 4795, 4799, 4803, 4807, 4811, 4815, 4819, 4823, 4827, 4831, 4835, 4839, 4843, 4847, 4851, 4855, 4859, 4863, 4867, 4871, 4875, 4879, 4883, 4887, 4891, 4895, 4899, 4903, 4907, 4911, 4915, 4919, 4923, 4927, 4931, 4935, 4939, 4943, 4947, 4951, 4955, 4959, 4963, 4967, 4971, 4975, 4979, 4983, 4987, 4991, 4995, 4999, 5003, 5007, 5011, 5015, 5019, 5023, 5027, 5031, 5035, 5039, 5043, 5047, 5051, 5055, 5059, 5063, 5067, 5071, 5075, 5079, 5083, 5087, 5091, 5095, 5099, 5103, 5107, 5111, 5115, 5119, 5123, 5127, 5131, 5135, 5139, 5143, 5147, 5151, 5155, 5159, 5163, 5167, 5171, 5175, 5179, 5183, 5187, 5191, 5195, 5199, 5203, 5207, 5211, 5215, 5219, 5223, 5227, 5231, 5235, 5239, 5243, 5247, 5251, 5255, 5259, 5263, 5267, 5271, 5275, 5279, 5283, 5287, 5291, 5295, 5299, 5303, 5307, 5311, 5315, 5319, 5323, 5327, 5331, 5335, 5339, 5343, 5347, 5351, 5355, 5359, 5363, 5367, 5371, 5375, 5379, 5383, 5387, 5391, 5395, 5399, 5403, 5407, 5411, 5415, 5419, 5423, 5427, 5431, 5435, 5439, 5443, 5447, 5451, 5455, 5459, 5463, 5467, 5471, 5475, 5479, 5483, 5487, 5491, 5495, 5499, 5503, 5507, 5511, 5515, 5519, 5523, 5527, 5531, 5535, 5539, 5543, 5547, 5551, 5555, 5559, 5563, 5567, 5571, 5575, 5579, 5583, 5587, 5591, 5595, 5599, 5603, 5607, 5611, 5615, 5619, 5623, 5627, 5631, 5635, 5639, 5643, 5647, 5651, 5655, 5659, 5663, 5667, 5671, 5675, 5679, 5683, 5687, 5691, 5695, 5699, 5703, 5707, 5711, 5715, 5719, 5723, 5727, 5731, 5735, 5739, 5743, 5747, 5751, 5755, 5759, 5763, 5767, 5771, 5775, 5779, 5783, 5787, 5791, 5795, 5799, 5803, 5807, 5811, 5815, 5819, 5823, 5827, 5831, 5835, 5839, 5843, 5847, 5851, 5855, 5859, 5863, 5867, 5871, 5875, 5879, 5883, 5887, 5891, 5895, 5899, 5903, 5907, 5911, 5915, 5919, 5923, 5927, 5931, 5935, 5939, 5943, 5947, 5951, 5955, 5959, 5963, 5967, 5971, 5975, 5979, 5983, 5987, 5991, 5995, 5999, 6003, 6007, 6011, 6015, 6019, 6023, 6027, 6031, 6035, 6039, 6043, 6047, 6051, 6055, 6059, 6063, 6067, 6071, 6075, 6079, 6083, 6087, 6091, 6095, 6099, 6103, 6107, 6111, 6115, 6119, 6123, 6127, 6131, 6135, 6139, 6143, 6147, 6151, 6155, 6159, 6163, 6167, 6171, 6175, 6179, 6183, 6187, 6191, 6195, 6199, 6203, 6207, 6211, 6215, 6219, 6223, 6227, 6231, 6235, 6239, 6243, 6247, 6251, 6255, 6259, 6263, 6267, 6271, 6275, 6279, 6283, 6287, 6291, 6295, 6299, 6303, 6307, 6311, 6315, 6319, 6323, 6327, 6331, 6335, 6339, 6343, 6347, 6351, 6355, 6359, 6363, 6367, 6371, 6375, 6379, 6383, 6387, 6391, 6395, 6399, 6403, 6407, 6411, 6415, 6419, 6423, 6427, 6431, 6435, 6439, 6443, 6447, 6451, 6455, 6459, 6463, 6467, 6471, 6475, 6479, 6483, 6487, 6491, 6495, 6499, 6503, 6507, 6511, 6515, 6519, 6523, 6527, 6531, 6535, 6539, 6543, 6547, 6551, 6555, 6559, 6563, 6567, 6571, 6575, 6579, 6583, 6587, 6591, 6595, 6599, 6603, 6607, 6611, 6615, 6619, 6623, 6627, 6631, 6635, 6639, 6643, 6647, 6651, 6655, 6659, 6663, 6667, 6671, 6675, 6679, 6683, 6687, 6691, 6695, 6699, 6703, 6707, 6711, 6715, 6719, 6723, 6727, 6731, 6735, 6739, 6743, 6747, 6751, 6755, 6759, 6763, 6767, 6771, 6775, 6779, 6783, 6787, 6791, 6795, 6799, 6803, 6807, 6811, 6815, 6819, 6823, 6827, 6831, 6835, 6839, 6843, 6847, 6851, 6855, 6859, 6863, 6867, 6871, 6875, 6879, 6883, 6887, 6891, 6895, 6899, 6903, 6907, 6911, 6915, 6919, 6923, 6927, 6931, 6935, 6939, 6943, 6947, 6951, 6955, 6959, 6963, 6967, 6971, 6975, 6979, 6983, 6987, 6991, 6995, 6999, 7003, 7007, 7011, 7015, 7019, 7023, 7027, 7031, 7035, 7039, 7043, 7047, 7051, 7055, 7059, 7063, 7067, 7071, 7075, 7079, 7083, 7087, 7091, 7095, 7099, 7103, 7107, 7111, 7115, 7119, 7123, 7127, 7131, 7135, 7139, 7143, 7147, 7151, 7155, 7159, 7163, 7167, 7171, 7175, 7179, 7183, 7187, 7191, 7195, 7199, 7203, 7207, 7211, 7215, 7219, 7223, 7227, 7231, 7235, 7239, 7243, 7247, 7251, 7255, 7259, 7263, 7267, 7271, 7275, 7279, 7283, 7287, 7291, 7295, 7299, 7303, 7307, 7311, 7315, 7319, 7323, 7327, 7331, 7335, 7339, 7343, 7347, 7351, 7355, 7359, 7363, 7367, 7371, 7375, 7379, 7383, 7387, 7391, 7395, 7399, 7403, 7407, 7411, 7415, 7419, 7423, 7427, 7431, 7435, 7439, 7443, 7447, 7451, 7455, 7459, 7463, 7467, 7471, 7475, 7479, 7483, 7487, 7491, 7495, 7499, 7503, 7507, 7511, 7515, 7519, 7523, 7527, 7531, 7535, 7539, 7543, 7547, 7551, 7555, 7559, 7563, 7567, 7571, 7575, 7579, 7583, 7587, 7591, 7595, 7599, 7603, 7607, 7611, 7615, 7619, 7623, 7627, 7631, 7635, 7639, 7643, 7647, 7651, 7655, 7659, 7663, 7667, 7671, 7675, 7679, 7683, 7687, 7691, 7695, 7699, 7703, 7707, 7711, 7715, 7719, 7723, 7727, 7731, 7735, 7739, 7743, 7747, 7751, 7755, 7759, 7763, 7767, 7771, 7775, 777

Shonky Music
for Tracker action Organs
Duration ca. 6 minutes

Martin Parker
February 2001

The score of *Shonky Music* does not look like it sounds. Written for tracker action organs that are able to make sound while the pipes are half drawn, *Shonky* exploits the unreliability of the king of instruments when prepared in this uneven manner. Certain configurations of the stops result in a keyboard that is both out of tune and consistently unpredictable; the generic scales and runs that litter the score become rhythms and melodies.

Shonky was first performed on the Reid organ, a fabulous machine housed in Edinburgh's Reid Concert Hall. It is an organ similar to that which Bach would have used in Leipzig. A second recording was made on the Henry Willis organ in the song school of St Mary's Cathedral, Edinburgh, which was built in 1887.

Four and seven minutes long respectively, the Willis and the Reid organ recordings show how wildly different the piece can sound. With no tempo marking on the score, it is the player's decision to respond to the idiosyncrasies of the instrument. When prepared, the Reid organ responded more sluggishly to touch and thus required a slower pace. For the more immediate response of the Henry Willis organ the performance was naturally much faster; labouring over the rather banal finger work would have yielded less interesting results.

Note to the performer:

Preparation of your organ is relatively simple. Take the left hand of the first line of *Shonky Music* and play it with only one stop half drawn (the stop you draw should be relevant to the lower octave of the organ), listen to the sound. If there is no sound at all, try pulling the stop out further but not so far as to make all the notes sound. Repeat this process for the stops relevant to the upper octave and play the right hand of the first line of *Shonky Music*. It is possible to change registrations during the piece and these moments are illustrated on the score. If your organ has no pedal, don't worry about this, use the lowest notes of the lowest manual where possible otherwise, ignore the pedal line.

shonky music

REID ORGAN EDITION

c. 7 minutes

Registration: Dulcian 8 : Quinte 1 1/3 : Trompete 8 : all half open

SubBass 16 and Oktave 8 almost fully open

lower manual

Martin Parker Feb 2001

Musical notation for measures 1-6. The score is in 4/4 time. The upper manual part features four triplet markings (3) over groups of notes. The lower manual part has a steady eighth-note accompaniment.

Musical notation for measures 7-10. The upper manual part continues with eighth-note patterns, while the lower manual part remains accompanimental.

Musical notation for measures 11-14. The upper manual part shows a change in rhythm with some dotted notes, while the lower manual part continues.

Musical notation for measures 15-18. Measure 15 is marked with a double bar line and the number 15. A box containing the letter 'A' is placed above the staff in measure 16. The upper manual part has a melodic line, and the lower manual part has a rhythmic accompaniment.

Musical notation for measures 19-22. Measure 19 is marked with a double bar line and the number 19. The upper manual part features a melodic line with eighth notes, and the lower manual part has a steady accompaniment.

Musical notation for measures 23-26. Measure 23 is marked with a double bar line and the number 23. The upper manual part continues with a melodic line, and the lower manual part has a rhythmic accompaniment.

B

27

Musical notation for measures 27-30. Treble clef has a melodic line with eighth notes. Bass clef has a bass line with eighth notes and chords marked with 'v'.

31

Musical notation for measures 31-34. Treble clef is mostly empty. Bass clef has a complex bass line with chords marked with 'v'.

C

35

Musical notation for measures 35-38. Treble clef has a melodic line starting in measure 38. Bass clef has a complex bass line with chords marked with 'v'.

39

Musical notation for measures 39-42. Treble clef has a melodic line with eighth notes. Bass clef is empty.

43

Musical notation for measures 43-46. Treble clef has a melodic line with eighth notes. Bass clef is empty.

47

Musical notation for measures 47-50. Treble clef has a melodic line with eighth notes. Bass clef is empty.

51

Musical notation for measures 51-54. Treble clef has a melodic line with eighth notes. Bass clef has a complex bass line with chords marked with 'v'.

D

55

Musical notation for measures 55-58. The system consists of two staves: a treble clef staff and a bass clef staff. Measure 55 starts with a whole rest in the treble and a quarter rest in the bass. The melody in the treble begins in measure 56 with a quarter note G4, followed by eighth notes A4, B4, C5, D5, E5, F5, G5. The bass line consists of a steady eighth-note accompaniment: G3, A3, B3, C4, D4, E4, F4, G4.

59

Musical notation for measures 59-62. The treble staff continues the melody from measure 58 with a quarter note G5, followed by eighth notes F5, E5, D5, C5, B4, A4, G4. The bass line continues with the same eighth-note accompaniment.

63

Musical notation for measures 63-66. The treble staff continues the melody with a quarter note G4, followed by eighth notes F4, E4, D4, C4, B3, A3, G3. The bass line continues with the eighth-note accompaniment.

E

67

Musical notation for measures 67-71. The system is split: measures 67-70 are in the bass clef, and measure 71 is in the treble clef. The bass line continues with the eighth-note accompaniment. The treble staff begins in measure 71 with a quarter note G4, followed by eighth notes A4, B4, C5, D5, E5, F5, G5.

72

Musical notation for measures 72-75. The system is split: measures 72-74 are in the treble clef, and measure 75 is in the bass clef. The treble staff continues the melody. The bass line continues with the eighth-note accompaniment. A text box above the treble staff says "use left hand here" with an arrow pointing to the bass staff.

(L.H.)

use left hand here

76

Musical notation for measures 76-79. The system is split: measures 76-78 are in the bass clef, and measure 79 is in the treble clef. The bass line continues with the eighth-note accompaniment. The treble staff begins in measure 79 with a quarter note G4, followed by eighth notes A4, B4, C5, D5, E5, F5, G5. A text box in the bass staff says "use your right hand to setup Mixture stop".

F

R.H. Upper Manual

L.H. Lower Manual

Musical notation for measures 80-83. The system consists of two treble clef staves. The upper staff continues the melody from measure 79 with a quarter note G5, followed by eighth notes F5, E5, D5, C5, B4, A4, G4. The lower staff continues with the eighth-note accompaniment.

85

Musical notation for measures 85-88. The system consists of two staves. The upper staff contains a melodic line with eighth and sixteenth notes, and the lower staff contains a corresponding accompaniment line. The music concludes with a double bar line and a repeat sign.

G

89

Musical notation for measures 89-92. The system consists of two staves. The upper staff contains a melodic line with various accidentals (flats and sharps) and a repeat sign at the end. The lower staff is empty.

G

93

Musical notation for measures 93-96. The system consists of two staves. The upper staff contains a melodic line with various accidentals and a repeat sign at the end. The lower staff is empty.

G

97

Musical notation for measures 97-100. The system consists of two staves. The upper staff contains a melodic line with various accidentals and a repeat sign at the end. The lower staff is empty.

G

101

Musical notation for measures 101-104. The system consists of two staves. The upper staff contains a melodic line with various accidentals and a repeat sign at the end. The lower staff is empty.

G

105

Musical notation for measures 105-108. The system consists of two staves. The upper staff contains a melodic line with various accidentals and a repeat sign at the end. The lower staff is empty.

G

109

Musical notation for measures 109-112. The system consists of two staves. The upper staff contains a melodic line with various accidentals and a repeat sign at the end. The lower staff is empty.

H upper manual

113

lower manual

118

122

126

130

134

138

Musical notation for measures 138-141, featuring two staves with rhythmic patterns.



142

J

Whatever Speed you played before, play faster here

Nasat 3 : Spitfiote : Rohrflote 4

Musical notation for measures 142-146, including a piano introduction and a flute part.



147

Musical notation for measures 147-150, featuring a piano accompaniment.



151

Musical notation for measures 151-154, including a treble clef staff and piano accompaniment.



155

K

Musical notation for measures 155-158, featuring a treble clef staff with a complex rhythmic pattern and piano accompaniment.

159

Musical notation for measures 159-161. The system consists of a treble clef staff and a bass clef staff. Both staves contain a continuous eighth-note accompaniment pattern. The treble staff has a higher melodic line, while the bass staff has a lower, more rhythmic line.



162

Musical notation for measures 162-164. The system consists of a treble clef staff and a bass clef staff. Both staves contain a continuous eighth-note accompaniment pattern. The treble staff has a higher melodic line, while the bass staff has a lower, more rhythmic line.



165

Musical notation for measures 165-167. The system consists of a treble clef staff and a bass clef staff. Both staves contain a continuous eighth-note accompaniment pattern. The treble staff has a higher melodic line, while the bass staff has a lower, more rhythmic line.



168

Musical notation for measures 168-170. The system consists of a treble clef staff and a bass clef staff. Both staves contain a continuous eighth-note accompaniment pattern. The treble staff has a higher melodic line, while the bass staff has a lower, more rhythmic line.



171

L

Repeat until Nasat 3 is closed

Musical notation for measures 171-173. The system consists of a treble clef staff and a bass clef staff. The treble staff begins with a fermata over the first measure, followed by a repeat sign. The bass staff continues with a continuous eighth-note accompaniment pattern. The treble staff has a higher melodic line, while the bass staff has a lower, more rhythmic line.

175

180

Leave only Spitzflote : Trompete out for upper manual

M

186

in this section, the right hand can be improvised instead, giving opportunity to explore unique sounds and rhythms of the particular settings of your organ

191

N

195

199

Musical score for measures 199-202. The top staff (treble clef) contains a complex melodic line with many sixteenth and thirty-second notes, including slurs and accents. The middle staff (bass clef) contains a simple harmonic accompaniment with long, flowing lines. The bottom staff (bass clef) contains a simple bass line with long, flowing lines. A double bar line is at the end of measure 202.

203


if you were improvising, stop and play this please

Musical score for measures 203-205. The top staff (treble clef) contains a complex melodic line with many sixteenth and thirty-second notes, including slurs and accents. The middle staff (bass clef) contains a simple harmonic accompaniment with long, flowing lines. The bottom staff (bass clef) contains a simple bass line with long, flowing lines. A double bar line is at the end of measure 205.

206

hold for an unpredictable length of time

Musical score for measure 206. The top staff (treble clef) contains a single note with a fermata. The middle staff (bass clef) contains a single note with a fermata. The bottom staff (bass clef) contains a single note with a fermata. A double bar line is at the end of measure 206.



Sounds of Line - Melody
Sounds of Line - Rhythm
For 4 prepared French horns
duration ca. 7 minutes

Martin Parker
September 2000

Sounds of Line – Rhythm
Sounds of Line - Melody
For 4 prepared French horns
duration ca. 7 minutes

Martin Parker
September 2000

Preparation of horns: ***Sounds of Line – Rhythm***

Each player removes the first finger valve slide on the F side leaving an open tube. The code F:1 is used above the note when that finger position is required. Subsequent fingerings follow logically: F:1|2, F:1|3, F:1|2|3. Otherwise, play the written pitches as comfortably as possible.

NOTE:

The first valve should only be removed on horns where the air reaches that valve last (Paxman models for example). On horns where the air reaches the first finger valve before going to valves 2 and 3, the 3rd valve slider should be removed instead (This is the case for Alexander horns for example). Simply alter the fingerings by swapping the number 1 with 3 where appropriate.

Preparation of horns: ***Sounds of Line – Melody***

Horns three and four should push F and Bb tuning slides in almost fully. Leave the valve slides. The idea is to play severely sharp of horns 1 and 2.

It is worth experimenting with placing the horns around the performance space, especially if the room is small and the players are comfortable with this idea. A good configuration follows:

First horn stands on the stage with third horn directly opposite at the back of the hall. 2nd horn is on the right (facing stage) and 4th horn is on the left. Standing waves and other beating patterns can be discovered across the space because of the close tuning.

Sounds of Line was first performed in Mittersill, Austria by the Salzburg Horn Quartet. The second performance took place in Salzburg in October 2000 and was subsequently broadcast by the Austrian Radio Federation (ORF) in December 2000.

This score includes minor revisions, made following rehearsals with the ensemble.

sounds of line

rhythm
for 4 prepared horns

As fast as possible

preferably double tongued

F:1

Martin Parker September 2000

Horn 1 in F

pp stacc.

Horn 2 in F

B \flat :0

ppp stacc.

Horn 3 in F

ord.

ppp stacc.

Horn 4 in F

5

Hn.1

F:12

F:1

mp

A

Hn.2

ord.

Hn.3

F:1

pp ppp pp

Hn.4

F:1

pp

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10

Hn.1 *pp*

Hn.2 *ppp* B:0

Hn.3 *ppp* *pp* *ppp* *pp*

Hn.4 *pp* F:1

15

Hn.1

Hn.2 *mf* F:12

Hn.3 F:13

Hn.4

19

B F:1

Hn.1 *pp stacc.* F:1

Hn.2 *ff* F:1

Hn.3 *pp stacc.* F:1

Hn.4 *pp stacc.* F:1

23

Hn.1 (F:1) *pp* ————— *mp*

Hn.2 *pp stacc.* *ppp* (F:1)

Hn.3 *pp* ————— *mp*

Hn.4 F:13 ord.

27

Hn.1 F:1

Hn.2 *f*

Hn.3 Bb:0

Hn.4 *f*

31 [C]

Hn.1 Bb:0 *pp* F:0

Hn.2 *f* *ppp*

Hn.3 Bb:0 *f* *ppp*

Hn.4 F:13 *pp* *f*

D

35

Hn.1 *ff* *ord.* *pp* *mp*

Hn.2 *flzg.* F:1 F:12 F:23 *f*

Hn.3 *ff* *ord.* *pp* *mp*

Hn.4 *ord.* *pp* *flzg.* F:1 F:12 *f*

40

Hn.1 *ff* *flzg.* F:1

Hn.2 *flzg.* F:1 F:12 *ff* *ppp*

Hn.3 *flzg.* F:1 F:12 Bb:23 *ff*

Hn.4 *f* *flzg.* F:1 F:12 F:23 *f* *ppp*

E

45

Hn.1 *pppp*

Hn.2 *ord.* *pp*

Hn.3 *pppp* *ord.* *ppp*

Hn.4 *ord.* *pp*

50

Hn.1

Hn.2

Hn.3

Hn.4

ord.

pp

F:1

F:12

F:1

54

Hn.1

Hn.2

Hn.3

Hn.4

ord.

pp

F:0

F:1

59

Hn.1

Hn.2

Hn.3

Hn.4

F

pp poss.

ppp

pp

p

pp

flzg.

When playing on Alexander model types, dont play G# and D#, play A nat and E nat

match the volume of first horn

64

Hn. 1

Hn. 2

Hn. 3

Hn. 4

pp

F3 tr F:1

f

68

Hn. 1

Hn. 2

Hn. 3

Hn. 4

cresc. poco a poco intenso

cresc. poco a poco intenso

F:23 tr F:123

f

F:23 tr F:123

mff

71

G

Hn. 1

Hn. 2

Hn. 3

Hn. 4

cresc. poco a poco intenso

ff

sub.

F:2 tr F:12

(tr)

mp

cresc. poco a poco intenso

Now Double Speed, (In 2)

from H, all horns separate.
Speed up and slow down
individually as per instructions

SCORE IN F

sounds of line

melody
for 4 prepared horns

delicate, distant/emfindlich, entfernt

Martin Parker September 2000

Horn 1

pp senza vib. sempre *pp*

pp senza vib. sempre *pp*

A

pp senza vib. sempre *pp*

hn. 3 (#)

pp senza vib. sempre *pp*

seconds of time

hn. 1
senza vib. sempre

hn. 4 (#)
ppp senza vib. sempre
 lunga -----

B

hn. 2
ppp senza vib. sempre

hn. 3 (#)
pp

C

hn. 1
 not synchronised with horn 3

hn. 3 (#)
 not synchronised with horn 1

D

hn. 2
pp

hn. 4 (#)
pp

hn. 2

hn. 3 (#)

E hn. 1

hn. 2

hn. 3 (#)

hn. 4 (#)

p senza dim.

p senza dim.

p senza dim. lunga poss.

p senza dim. lunga poss.



In formation II

For Treble recorder (doubling descant and tenor) and CD
Martin Parker, April 2000

In formation II is a
two-record set.

Tracks for Treble are:
The Descant of the
In Remains 2 for 1
In Remains 2 for 1

CD 1001
1002

Tracks for Tenor are:
CD track and tenor
play it. The play
and the CD track.

Tracks 1 produced a
a play and where to
in the recorder part

In formation I was
described a CD set
eventually for the
recorder two CD's
that these records
on the plate.

These from which I
travels that would
and words of how
speak about for me
to more information

In formation II was
improvisation for
Also, no records
between the two
instruments.

Was continuing with
Specify the material
ed to a relationship
and an additional

The first recording of In formation II was made in 1998. The recorder's key
at odds with the CD recording. The original recording is found in the CD
part from which the word played and sung by the tenor recorder half way through.
The final movement was the CD and recorder come together with the CD pushing
the single expressive recorder part towards the tenor's breakdown.

In formation II was first performed in Edinburgh at the Builders Theatre as part of the
dialogue festival. A second performance took place in Szeged, Hungary in the
courtyard of Miksa's Castle at the fourth International Electro-Acoustic Summer
Meeting, July 2000. The accompanying recording features the performance and
some of the recorded ambience.



In formation II

For Treble recorder (doubling descant and tenor) and CD
Martin Parker, April 2000

Three movements

I: Angular, irregular, incisive, fast and loud [Treble and Descant]

II: Still [Tenor]

III: Fast | Lazy [Treble]

In formation II is one of four pieces produced during 18 months of collaboration with the recorder player Laurie Crump:

Tome for Treble recorder and CD 12.1998

The Distance of the Moon for Contrabass recorder and CD 02.1999

In formation I for bass recorder, pitch shifting delay lines and CD 06.1999

In formation II for descant, treble and tenor recorders and CD 04.2000

Tome was semi-improvised; beginning with samples taken from Laurie, I produced a CD track and from that point, a score with pointers as to what to play and where to play it. *The Distance of the Moon* had a full score notating both the recorder part and the CD track.

In formation I on the other hand began with a few notated ideas from which I derived a CD accompaniment and some of the extended techniques that would eventually be improvised in performance. To merge the sound world of bass recorder and CD part, we added some pitch shifting delay to Laurie's input for the first three quarters of the piece. Please consult the appendix for more information on this piece.

In formation II was the last work in this collaboration but rather than continuing with improvisational themes we returned to a score to organise and specify the material. Also, no recorder samples were used on the CD track. This led to a relationship between the electronics and instrument not previously explored, an association perhaps best described as accompaniment and soloist.

The first movement is some kind of an extended exposition with the recorder's loop at odds with the CD's percussion. The second movement is almost a solo for CD apart from a single chord played and sung by the tenor recorder half way through. The final movement sees the CD and recorder come together with the CD pushing the almost impossible recorder part onwards and towards breakdown.

In formation II was first performed in Edinburgh at the Bedlam Theatre as part of the *dialogues* festival. A second performance took place in Sárvár, Hungary in the courtyard of Nadasdy Castle at the Fourth International Electro-Acoustic Summer Meeting, July 2000. The accompanying recording features this performance and some of the incredible ambience of the courtyard.

In formation II – note to the performer

All CD cues labelled on the score are taken from the part that was used by Laurie Crump, the first performer of this piece. You may feel it necessary to add other marks to the part in order to help synchronisation with the CD.

During the first rehearsals with the CD, it will be necessary to have sight of the CD player's clock counter. This is not necessary after plenty of rehearsal although we found that use of a stopwatch, reset at the beginning of each movement was very useful in the heat of performance.

On the notation

First movement:

The notation is not immediately easy to read and has not been 'optimised' for the interpretation of bar based music. This is a deliberate conceit. You will notice upon listening to the performance on CD that each note is only loosely interpreted for its duration, as are the surrounding rests. Pitches are specific but the rhythmic relationships between the notes are to be searched for but do not need to be accurate. This style of notation should help in approximating one's way through this movement as if sight-reading.

Second movement:

You might find it easier to locate the sung pitch by playing the note on the recorder first. This is fine. Players unable to reach the G below middle C are welcome to sing the G above instead. Please don't transpose the recorder note unless you really need to.

Third movement:

An attitude similar to the one required in the first movement is necessary for success in this movement. I suggest learning this material from bar 21. This sequence of notes is the only 'lick' you will need for the whole movement. Notice that the first phrase in bar 2 is derived from this pattern and the high notes in bar 9 are also extracted from there. To get the right 'feel' for this, labour the rests slightly in between notes as if you are sight-reading.

Final note:

The CD recording of this performance will be very helpful in learning where your entries belong in relation to the CD track so please listen to this before you begin to learn the piece. However, please don't get bogged down in trying to replay Laurie's version, there is more than one way to skin this cat.

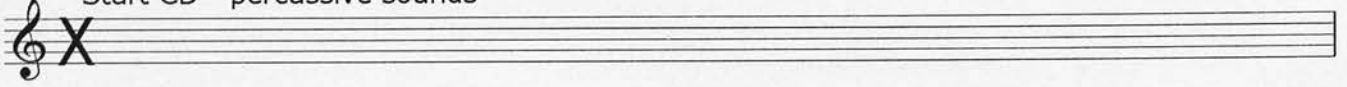
IN FORMATION II

for Treble(doubling descant) recorder and CD
dur. ca. 10:07

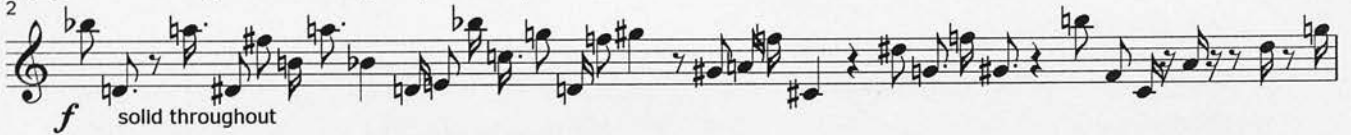
first movement

1 Start CD - percussive sounds

Martin Parker April 2000



0:25 Angular and irregular, incisive, fast and loud



c.2:03

Electronics join you in accompaniment first, then in competition

10 *ff* poco dim - back to *f*

11

12

13

14

15

16

17

18

CD stops somewhere around here

19

stop abruptly when the time is right somewhere along this line

20

second movement

Tenor Recorder

The musical notation consists of a single staff with a treble clef. It is divided into four sections by vertical bar lines. The first section is labeled 'Wait'. The second section is labeled 'Play' with the time '1:13' below it; it begins with a 'sudden cresc. on CD' and contains a note with a slur underneath it. The third section is labeled 'Stop' with the time '1:37' below it. The fourth section is labeled 'Wait'. A dynamic marking 'mp' is placed below the staff between the second and third sections. The word '(sing)' is written below the slur in the second section.

Wait Play Stop Wait

1:13 1:37

sudden *cresc.* on CD (sing)

mp

Big Breath

1:04, with bells

20 *f* with charisma

22

25 crescendo on CD

29

30

31

32 Noise on CD 1:36 *ff* slightly detached

35 *pp* *cresc. poco a poco* attacca cascade on CD

37

38

39

41

attacca (almost) 2:15, lazy/cool

45

2:32 crescendo on CD 2:35

48

2:35 push forward lazily c.2:44

espress.

50

c.2:49/50 (short)

c.3:02-3:11, bell sounds on tape
fast, agitated, crazy

53

fff

54

over blow

Antiorp

2 Clarinets in Bb
Bassoon
Contrabass Recorder
7 string Viola da gamba (scordatura)
Large Bass Drum

Duration ca 15 minutes

Martin Parker
November 1999



ANTIORP

2 Clarinets in Bb

Bassoon

Contrabass Recorder

7 string Viola da gamba (scordatura)

Large Bass Drum

Duration ca 15 minutes

Martin Parker

November 1999

2000

2 Clarinets in Bb

Bassoon

Contrabass Recorder

7 string Viola da gamba (scordatura)

Large Bass Drum

All instruments play from staves. (Each instrument has its own staff)

Clarinets are written in Bb

Clarinets II is set at one sharp of Clarinet I (i.e. Bb) which

is usually followed by a sharp change for the second clarinet

Timing systems for the score are shown in brackets



The score is written as sounding for the specific player

All double bar lines and slurs are written as indicated in brackets

For example, a quarter rest at the beginning of the staff is an open staff

All double bar lines mean play the current note a quarter rest and rest for the next 4 quarter notes

Although very precise instructions are given in the standard up to now in brackets, generally and usually a double bar line is written with other instructions in brackets. The score is a series of intervals and a sequence that a rest for the player and which is play can be found during rehearsal.

When polyrhythmic is required, the score, across the other instruments is used.

As always we usually play and rest for the score.

The first staff should be as close as possible to the standard up to now in brackets for playing the score, across the rest and a rest for the player and which is play can be found during rehearsal.

The score includes a worksheet to determine if a new system for the first staff. However, other instructions can be found with particularity that the fourth staff of the current or with particularity on the second staff.

The score is set in a staff and volume across the top of the staff systems through the system musical and timing these notes is also very difficult.

Revised and revised by GUPPO (University of Edinburgh) Music Group Ltd in November 1999.

Notation and instructions - Antiorp

INSTRUMENTS

2 Clarinets in Bb

Bassoon

Contrabass Recorder

Viola da Gamba (Scordatura)

Bass Drum

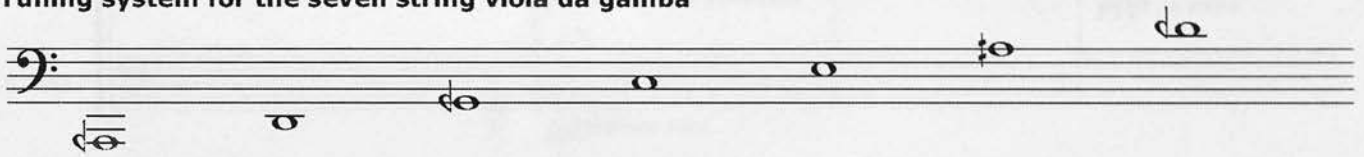
All musicians play from score, there is no conductor

Clarinets are written in Bflat

Clarinet II is set to play sharp of Clarinet I by 1/4 of a tone

This is easily achieved by lengthening the instrument a little

Tuning system for the seven string viola da gamba



The score is written as sounding for the gamba player.

All quarter flat and sharp notes are written as expected to sound

for example, G quarter flat at the bottom of the stave is an open string

(♮) this symbol means play the natural note 1 quarter flat and NOT the flat note 1 quarter flatter

Although very precise instructions are given to the musicians as to how to approach, generate and complete a sound, temporal synchronisation with other instruments is rarely made specific. The score is a map of instructions and it is expected that a feel for the piece and WHEN to play will be found during rehearsal.

When synchronisation IS required, bar lines, arrows and other instructions are used.

Accidentals are usually pitch and NOT bar specific.

The Bass drum should be as large as can be found. Large soft beaters are required for playing the long, uneven rolls and a dry hand is needed for making squeeks on the skin of the drum

This score includes an instruction to clarinetist II to play Kazoo for the final notes.

However, other experiments can be made with harmonica, just the mouth piece of the clarinet or with gentle fluttering on the normal clarinet.

The idea is to get a weak and unstable sound, not to make the audience laugh or put the players off. Singing these notes is also very difficult.

Antiorp was written for EUCME (Edinburgh University Contemporary Music Ensemble) in November 1999.

Antiorp

Martin Parker 1999

Bassoon

$\text{♩} = \text{c. } 90$

sim.

ppp with papery sound

Bsn

Bsn

C.B. Rec.

wait for end of Recorder note

three counts of silence

hold for as long as comfortable

ppp almost silent

ppp as before

Bsn

C.B. Rec.

flutter

$\text{♩} = \text{c. } 50$

ppp (as before)

Cl. II

Bsn

C.B. Rec.

hold for as long as comfortable

sub tone P P P P P try to match pitch of recorder singing voice

sing

ppp niente

Bsn

$\text{♩} = \text{c. } 40$ $\text{♩} = \text{c. } 90$ $\text{♩} = \text{c. } 40$ $\text{♩} = \text{c. } 90$

ppp

Bsn

C.B. Rec.

repeat until clarinets appear

ppp

sub tone

Cl. I

ppppp senza cresc. hold for as long as possible, stop with Cl. II

sub tone

Cl. II

ppppp senza cresc. hold for as long as possible, stop with Cl. I

Bsn

B. Viol

BassDrum

uneven roll with large soft beaters

tr

ppppp

♩ = c. 60

Bsn

ppp poss, fuller sound

C.B. Rec.

(sing)

♩ = c. 60 VII (open string 1/4 flat)

very slow bow sul pont (almost on bridge)

B. Viol

pp

BassDrum

(tr)

make skin of drum squeek with fingers and flesh of palm

ppppp

♩ = c. 90

B. Viol

II (open) III VII VII II III II

sul pont estr., gritty bow

pp

ppp

pp

ppp

pp

vib.

pp

p

♩ = c. 72

BassDrum

fingers

palm

fingerspalm

fingers

pp

mp

p

mf

Cl. I *ppp* very slow lip gliss if possible

Cl. II *ppp*

Bsn *p sub.* *urgently (mp)* *sub.* *pp(poss)*

C.B. Rec. *mp* *ppp* *ppp*

B. Viol *♩ = c. 50 VII* *♩ = c. 90 III* *bow pressure increase* *ppp pp mp ppp* *hold for entire down bow*

BassDrum

C.B. Rec. *♩ = c. 90 V*

B. Viol *as before, gritty* *bow pressure increase* *II III I* *ppp* *p*

p pp sempre

Cl. I *ppp*

Cl. II *ppp*

Bsn

C.B. Rec. *pp* *smprz* *p* *pp* *dim al niente possibile* (long)

B. Viol *mf* scratch tone

BassDrum *ppppp* (sempre) uneven rolling with large soft beaters

Cl. I *pp* pinched squeaks from reed with a dense but random rhythm, as if practicing a high note

Cl. II *pp* pinched squeaks from reed with a dense but random rhythm, as if practicing a high note

Bsn

C.B. Rec. *pp* *mf* *pp* niente

B. Viol

BassDrum abrupt stop before clarinets

stop abruptly with Cl. II

stop abruptly with Cl. I

stop abruptly with Cl. I

stop abruptly with Cl. II

as before

Cl. I

Cl. II

Bsn

C.B. Rec.

B. Viol

BassDrum

stop abruptly

ppp

as before

clarinet II switch to kazoo

ppp

$\text{♩} = c. 96$

pppp(poss.)

pppp(poss.)

$\text{♩} = c. 60$

pp

III

ppppp

sul pont. (almost on bridge)

ppp

Bsn

C.B. Rec.

B. Viol

sul pont.

spz

ppp

ppp

V

Bsn
ppp (as at the beginning)

C.B. Rec.
ppp *dim al niente* *pp*

B. Viol
ppp *sul tasto*

BassDrum
mp *pppp*
fingers on skin of drum
with beaters

Cl. I
pp (weak) *pp* (weak) *pp* (weak)

Cl. II
p (Kazoo) *pp*

C.B. Rec.
p (sing)

BassDrum
Roll with large beaters

Cl. I
p stop abruptly

Cl. II
p stop abruptly

Bsn
mf strong

BassDrum
stop abruptly L.V.

Detailed description: This page of a musical score features seven staves. The top staff is for Bassoon (Bsn) in bass clef, with a *ppp* dynamic and the instruction '(as at the beginning)'. The second staff is for Contrabassoon (C.B. Rec.) in bass clef, with dynamics *ppp*, *dim al niente*, and *pp*. The third staff is for Bass Violin (B. Viol) in bass clef, with *ppp* and *sul tasto*. The fourth staff is for Bass Drum (BassDrum) in a drum clef, with *mp* and *pppp* dynamics, and instructions 'fingers on skin of drum' and 'with beaters'. The fifth staff is for Clarinet I (Cl. I) in treble clef, with *pp* (weak) dynamics. The sixth staff is for Clarinet II (Cl. II) in treble clef, with *p* and *pp* dynamics, and '(Kazoo)'. The seventh staff is for Contrabassoon (C.B. Rec.) in bass clef, with *p* and '(sing)'. The eighth staff is for Bass Drum (BassDrum) in a drum clef, with 'Roll with large beaters'. The ninth staff is for Clarinet I (Cl. I) in treble clef, with *p* and 'stop abruptly'. The tenth staff is for Clarinet II (Cl. II) in treble clef, with *p* and 'stop abruptly'. The eleventh staff is for Bassoon (Bsn) in bass clef, with *mf* strong. The twelfth staff is for Bass Drum (BassDrum) in a drum clef, with 'stop abruptly L.V.'. The score concludes with a double bar line.



In formation I
For bass recorder, CD and Digital Delay
Martin Parker and Laurie Crump, September 1999

APPENDIX



In formation I

For bass recorder, digital delay and CD
Martin Parker and Laurie Crump, September 1999

-one movement

non-directional becoming suddenly purposeful
duration ca. 5'40

In formation I is one of four pieces produced during 18 months of collaboration with the recorder player Laurie Crump.

The working process for *In formation I* began with a few notated ideas from which we derived the CD track and extended techniques that would eventually be improvised in performance. To merge the sound world of bass recorder and CD part, we added some pitch shifting delay to Laurie's input for the first three quarters of the piece.

No notation is submitted with this piece. The CD backing track (track 2 on the audio partition of the CD and also part of the performance software) is the fixed element that should be followed by the performer as sensitively as possible.

One might consider the title of this piece as the score itself. The work is in the process of formation; there are elements that sit together with the CD and make successful moments in themselves but structurally, very little actually happens. There is the suggestion of completeness at the end but this could be a flush of anger and frustration at there being no material there in the first place.

I experimented with the idea of a title actually encompassing a whole piece in 1998 with a percussion work called *Surge*. The piece went through several incarnations before never being completed; it began as a fully notated score with lots of detail for the percussion players and then receded to a graphic score, with exactly the same shape and instrumentation as before but with less detail. The final version of the piece was to be the word *Surge*, played by the percussionists and informed by a sight-read/rehearsal of the two other versions of the piece.

Ultimately, this turned out to be a non-starter with the musicians and rightly so, too much of the composition of the piece lay in the hands of the performers without offering them the true freedom of improvisation.

With *In formation I*, I took similar ideas but enjoyed a far more rigorous approach to material as many hours were spent in the creation and rehearsal of the piece with the eventual performer of the piece.

In formation I is submitted as an appendix to *In formation II* in order to illustrate further the working process that went on with Laurie and the recorder and electronics pieces we wrote together in 1999 and 2000.

Note to potential performers;

This piece was created as an 'improvised composition' where live material is not specified but limited to some possibilities and not others. These possibilities were discussed and rehearsed carefully with Laurie Crump (for whom the piece was written) and his version of the piece can be heard on the accompanying CD.

Performers should consult the CD for an idea of how to perform this piece, there is no definitive performance criteria only that the sentiments on the CD should be tracked live, you are not encouraged to add much alternative or contrasting material to that which is present on the CD track.

Consider the following material as content for your improvisation:

Short fast rising scalar patterns

Key clicks, key trills

Light blowing from half notes to full notes

Long sustained pure tones with occasional discolour from over blow and key noise

Trills between clicks and open notes

Rhythmic impulses towards the end of the piece

Try singing down the instrument as you approach the end of the piece

In order to facilitate easy rehearsal with the backing track and pitch shifting delay, the CD also features a piece of software. This will execute on any Apple Macintosh computer running OS 10.2 and above. The software has the backing track bundled with it (see below for more details) and should begin when the start toggle is clicked.

If you have access to a midi interface and expression pedal, the controller values from the expression pedal can be mapped onto the dry/wet mix of the pitch shifting delay. This should give you more control over your gestures however this can be left to an assistant in performance if you prefer.

Below is a simple map of how things flow on in the live version of the piece recorded at the Bedlam Theatre in April 2000.

(track 3 on CD)

CD time	CD description	Bass Recorder	Effects
0'00 - 1'15	Slow groove	Key clicks with occasional pitches, slightly overblown or under blown, never fully clear	Pitch shift (down) with slight delay
1'15 - 1'54	Starts to come together with suggestion of pitch material	Increasing agitation	
1'54 - 2'38	Relatively sudden release of tension. Dead zone, with some key-click activity	Few notes and plenty of key activity	Remove briefly
2'38 - 3'40	New zone with very slow chords	Become more active and subside.	Pitch shift still in place
3'40 - 4'20	New chords appear and frequency of old chord increases focusing on one note	Sustain notes, very subdued	Manually alter the dry/wet parameter to keep effects minimal but still present
4'20 - 4'55	More long notes and hesitation	Begin to shape something rhythmical with energy and agitation	
4'55 - 5'15	CD seems to join in the agitation	Definitely rhythmical	
5'15 - 5'25	Sudden CD presence and final outburst.	Outburst in CD coincides with your own climax	Pitch shift off completely.
5'25 - 5'40	CD holds a breath of air for 15 seconds	STOP	STOP

In formation I

Standalone application for performance

This software has the backing track bundled within it. This explains the large size of the file; >60mb.

A midi foot pedal can be assigned to the wet/dry mix of effects. The performer can then enjoy greater control over where and when the effect is used. This technique was not implemented in the original version of the piece.

Other parameters are midi controllable and controller numbers can be assigned to these parameters by manipulating the number boxes next to the words *ctrl. no.*

Requires Mac OS x 10.2 or above, a computer with 256 mb ram is preferred. You will also need 100mb of free disk space.

The patch makes extensive use of GRANOLA~ developed by Eric Lyon. The external is available freely for artistic or research purposes and can be downloaded here:

<http://arcana.dartmouth.edu/~eric/MAX/>

Martin Parker
mp@tinpark.com
07.04.04