

“Gone With The Wind”

This ran through July and August 2011 at The Raven Row Gallery..

The Aeolian part of this installation was invisible to the public, consisting of a number of aeolian ‘sounding’ instruments on the roof of the gallery. These were all amplified, the signals from them fed three storey’s down to a mixer concealed in a cupboard in the first floor gallery, by a multi-core audio cable.

The mixer was a Soundcraft Folio SX, with twelve microphone inputs. Not a new mixer, but quite adequate. There is a high pass filter, particularly useful for reducing unwanted low frequency rumble which can have large amounts of energy, and three band equalizer on each channel.

The stereo output of the mixer fed two compressors in series, one set to produce subtle but heavy compression (a low compression ratio), and the second to act more like a limiter (a high compression ratio) to protect the following amplifier and guard against the sound level becoming excessively high. The aim was to make low level sounds much louder when wind speed was low, while restraining the sound level when wind speed was high, or when birds, other flying objects, and people working on the roof touched any of the instruments. Rain, thunder and other events would also become audible, without danger of overload, hearing damage or discomfort.

The amplifier was a Cambridge Audio hi-fi amplifier which drove a pair of Visaton EX 60S 25W exciters screwed to the rear of doors into the gallery. The exciters are transducers, effectively loudspeakers without cones. They are designed to be fixed to objects, such as tables or window glass, to make them produce sound. This worked extremely well, producing sound that filled the room, with no visible technology.

Thus all electronic devices, apart from the pre-amplifiers, were kept warm and dry inside the gallery, and no mains power cables were required outside.

No further processing was involved. An immaterial, ever changing, non-repeating soundscape produced by natural forces would occur, existing only as sound, which is transient. Processing could have made it all a bit 'artificial'. The only processing considered was spatial, using the same techniques as for "Internal Landscape" to position the instruments in the room to reproduce their spatial position on the roof and to emphasise differing weather conditions at different positions. As there were not enough invisible exciter mounting options in the gallery to make this work the idea was abandoned.

As wind is very variable to non-existent in London the challenge was to achieve something that would produce sound reasonably consistently, and survive the vagaries of British summer weather over a period of more than two months.

The Instruments

The 'instruments' included a number of rectangular steel plates excited by strikers, suspended from latex strips stretched between existing hand-rails. As the plates are ferrous, electro-magnetic devices are ideal for use as pick-ups, as they do not need to be in contact with the plate and would not affect their resonant properties.

The plate has to be supported, and the pick-up needs to be rigidly mounted close to it. Plates have several modes of vibration, and any support will damp some of them.

Experimentation revealed that a hole drilled in the centre of the plate to allow suspension did not adversely affect resonances across the diagonals of the rectangle. The pick-ups came from re-cycled hospital radio headphones, and they had a bracket to fix them in the right position in the headphones. A 10cm length of 4mm studding would allow the plate to be clamped between two nuts at the top, and the pick-up mounted below it clamped with two more nuts. Then the distance between pick-up and plate could be easily adjusted, and the pick-up be angled to pick up the resonant node across the diagonal of the plate.

A 20mm plywood rectangle larger than the plate was cut, to supply a firm base which could be further weighted with sandbags or concrete tiles. This was painted to increase its weather resistance. U-shaped aluminium strip was cut to length, drilled in the centre so that the bottom of the 4mm studding could be fixed to it with two more nuts, and screwed to the plywood. Locking washes were used behind each nut to ensure that everything would remain

in the correct place.

Five of these were constructed, allowing them to be freely placed on the flat roof of the gallery, and modified and adjusted as necessary.

The basic scaffold structure of “Glacier” was modified to support a single stainless steel sheet from its top edge. This would move in very little wind and provide a variety of ‘thunder-sheet’ sounds, from quiet low metallic rumbles to loud crashes. The bottom corners of the sheet were tie to the frame with fishing line to prevent excess movement and ensure that the sheet did not hit the scaffold frame.

A pick-up, made from a Maplin piezo-electric disc glued to a small piece of Perspex, covered with a generous layer of epoxy resin then encapsulated in PlastDip, was then attached to the sheet at the top with a Micro Spring clamp, again from Maplin.



Max constructed two bows with nylon strings, which also responded well to low velocity wind, producing fairly high pitched sounds akin to boat stays vibrating in the wind. The wooden bow was cable tied to vertical scaffold poles clamped to the hand rail on the roof, so that the string was vertical and the bow as high as possible. The pick-ups for these were the Tiger Piezo Clip-On, simply clipped onto the wooden bow.

There was also a more conventional Aeolian Harp, previously constructed by Max. This had steel strings, which were not adequately excited by low wind speeds, probably due to the mass and tension of the strings. It rarely produced any appreciable sound, despite large amounts of amplification. The strings would also rust fairly quickly, especially as July and August were fairly wet months. The pick-up was another Maplin/Piezo/Perspex device clamped to the bridge.

Four of the DIY ESP preamps, and two Behringer D120 dual DI boxes were used. These were generously wrapped in cling film, along with a 100gm silica gel sachet to absorb moisture, and the whole thing wrapped in PVC tape to seal any gaps, particularly where the cables emerged from the cling film. They were then cable tied under the hand rail wherever possible, and more PVC tape around vulnerable looking areas. Over two months later, when the installation was dismantled, there was no sign of any moisture inside the wrapping, and the silica gel sachets were completely dry. The sachets can be re-used by baking in a domestic oven.

All exterior XLR connections, and there were a fair number, were also similarly wrapped, and showed no moisture problems.