

Tonal Lines

Dale Cotton | Gina Ferguson



A drawing is simply a line going for a walk.... Paul Klee

A piece of charcoal is a drawing tool, responsive to the artists touch as a means of articulating an expression or critique of the world we inhabit... the sound of charcoal on paper is an unmistakable sound- on the one hand irritating on the other it renders a comforting tone. It is the sound of the start of something, the sound of a line, a tonal line. It is the tool that activates the concept, mitigating the space between touch, paper and the idea or vision.

Tonal Lines I

.When walking in the gardens you embark on a journey. Sound, touch, smell and sight are all heightened in unpacking the surrounding environs (especially in an edible garden). This work is about human intervention, listening, looking, working with, and responding to the environment in which we inhabit.



In this installation, the viewer is given an opportunity to consider a charcoal stick / scorched branch and through touch and movement generate a corresponding tone / sound (this tone line is not a visual mark but an aural tone).

Each charred wooden remnant operates as both a referential charcoal drawing stick and a stark reminder of the fragility of our changing environment, as we navigate the impacts of climate differentials. The branches and sticks are collected from the cuttings and felled trees/ branches from within the gardens itself... then charred and coated with a protective resin/ urethane coating) Refer image below.



The charred central branch is suspended between the lattice structure by stainless steel wire. It hangs down between the frame with a clearance of 30cm from the ground. The surrounding charred sticks, hanging by stainless steel woven wires within their frames have a ground clearance of 2.25 metres. They are operating as beacons or aeriels, responding to human touch and manipulation generated by the currents and wind patterns in the air, picking up the subtle movements and shifts. These echo the rustle of leaves and the bowing of the branches. Situated between the machined wood structure they further notions of process and offer a visual juxtaposition to the structure itself— the manmade versus the natural.

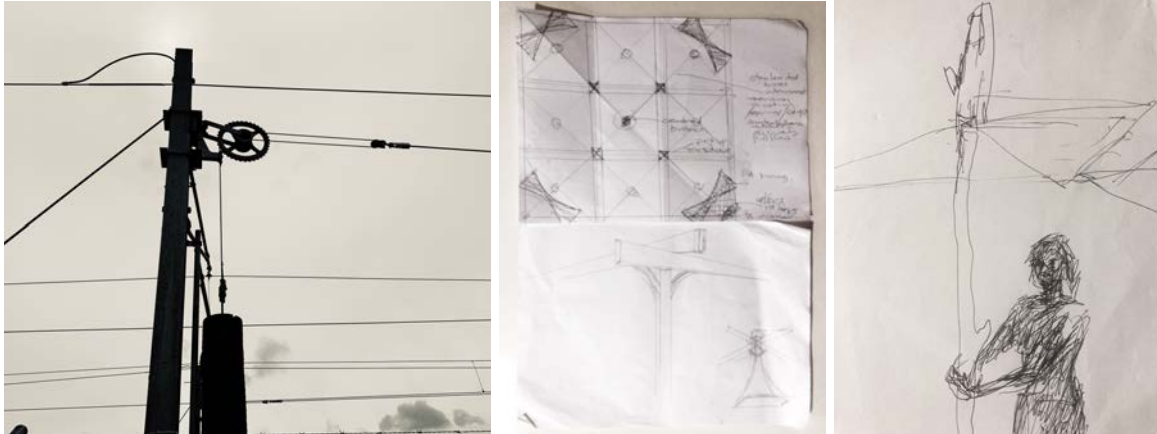
The wires that hold these sticks/ branches in place are interlinked so they can sway in unison and the tension is maintained. As one wire tightens its oppositional wire slackens to take up the strain.

The disturbance from the wind and related movement of the branch/ sticks causes the stainless steel wires to vibrate and it is this vibration that is picked up and through a sonification process, mixed to produce a rich composition that is essentially an aural rendering of the environment its atmospheric shifts in combination with the tonal sound generated from human intervention/ touch (moving the central branch). The wires are interconnected and tensioned (refer images below) so every movement has a counter movement and the slack is taken up. These stainless steel wires pass over transducers so the corresponding vibration is picked up.



The kinetic and interactive aspect will be developed in relation to two primary possibilities.

1. Ideally the stick suspended from the centre of the grided structure is longer and operates like a lever – it can be touched and maneuvered to enable the smaller sticks/ branches to sway in unison with correlating wire vibrations picked up.
2. Alternatively all sticks remain out of reach...the wire holding the sticks is directly touched or plucked to generate vibrations and subsequently cause the stick(s) to move (re a tensioned pully system anchored at each 4 outer points on the preexisting structure) refer eg image below).



The sound element is transmitted in part through electro mechanical means to an amp with computer located in the adjacent shed (noting this will need to have power and be lockable refer image below).



Above: Hut where computer and amp will be situated. (Electricity will be enabled via cable in conduit/ battery or solar power)

Above Right: Development of algorithmic score that will be mixed with live field recordings from site.
Link to the sound of Whistler's:

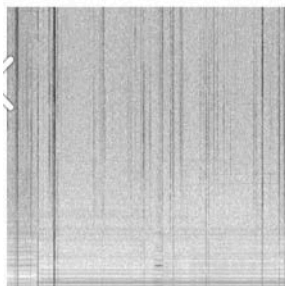
https://www.google.com/search?q=whistler+mode+chorus+waves&client=safari&rlz=en&scrf=AjOqzUJLdxc-NuDwwAJZvaUz_pXH8vCYDg:167628463347&source=lnms&tbm=vid&sa=X&ved=2ahUKEwimp_Pwpl9AhVZ-igGHTa_B_OQ_AUoA3oECAEQBO&biw=960&bih=502&dpr=3.5#fpstate=ive&vld=rcid4765e96vid5GjlaMqnUJ

The live human generated score will be layered / mixed with an ecoacoustic algorithmic sonic score derived from the wider atmosphere ie the weather, solar winds, sferics, whistlers etc- referencing the birds, trees and mater that interface with, and is effected by, climate variables.

'When sferics propagate over long distances, the different frequencies penetrate the ionosphere to different depths, disperse and arrive at different times, creating a sound similar to bird song.'

Sferics:

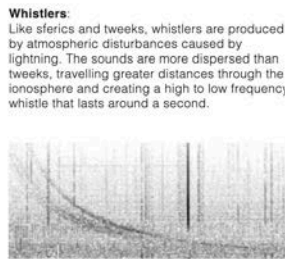
These are atmospheric disturbances caused by lightning. These signals can be picked up from thousands of miles away and manifest themselves as short, sharp clicks. These are one of the more common sounds to hear whilst listening to VLF.



A spectrogram showing sferics.

Tweaks:

These are produced through similar disturbances to sferics. The difference in sound comes from the source travelling a larger distance through the ionosphere, resulting in lower frequencies travelling slower than higher ones. Rather than short, sharp clicks, tweaks sound like birds tweeting. A visible hook often appears on spectrograms indicating tweaks.



A spectrogram showing a whistler. Image from Backyard Astronomy.

Whistlers:

Like sferics and tweaks, whistlers are produced by atmospheric disturbances caused by lightning. The sounds are more dispersed than tweaks, travelling greater distances through the ionosphere and creating a high to low frequency whistle that lasts around a second.

Northern Lights:

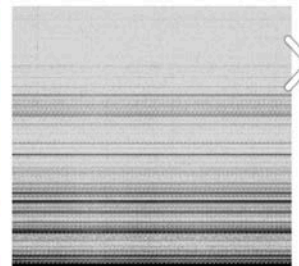
If you're able to get far north (where reception is best) and away from large areas of manmade electrical signals, you may be able to pick up VLF signals produced from the Aurora Borealis. This sounds like large numbers of birds flocking and calling to each other.



Northern lights in Manitoba, Canada. Image from Stephen P. McGreevy.

Manmade Interference:

A number of manmade signals can also be heard in the VLF band. A prominent sound is often from the electrical grid – a constant low hum from around 50Hz. Mobile phone signals, satellite communications and some military communications can also be heard.



A spectrogram of the 50Hz hum.

<https://www.youtube.com/watch?v=IZ5ZvVZ4jWk>
<https://spark.iop.org/sferics-tweaks-and-whistlers#:~:text=Sferics%20typically%20have%20frequencies%20in,sound%20similar%20to%20bird%20song>

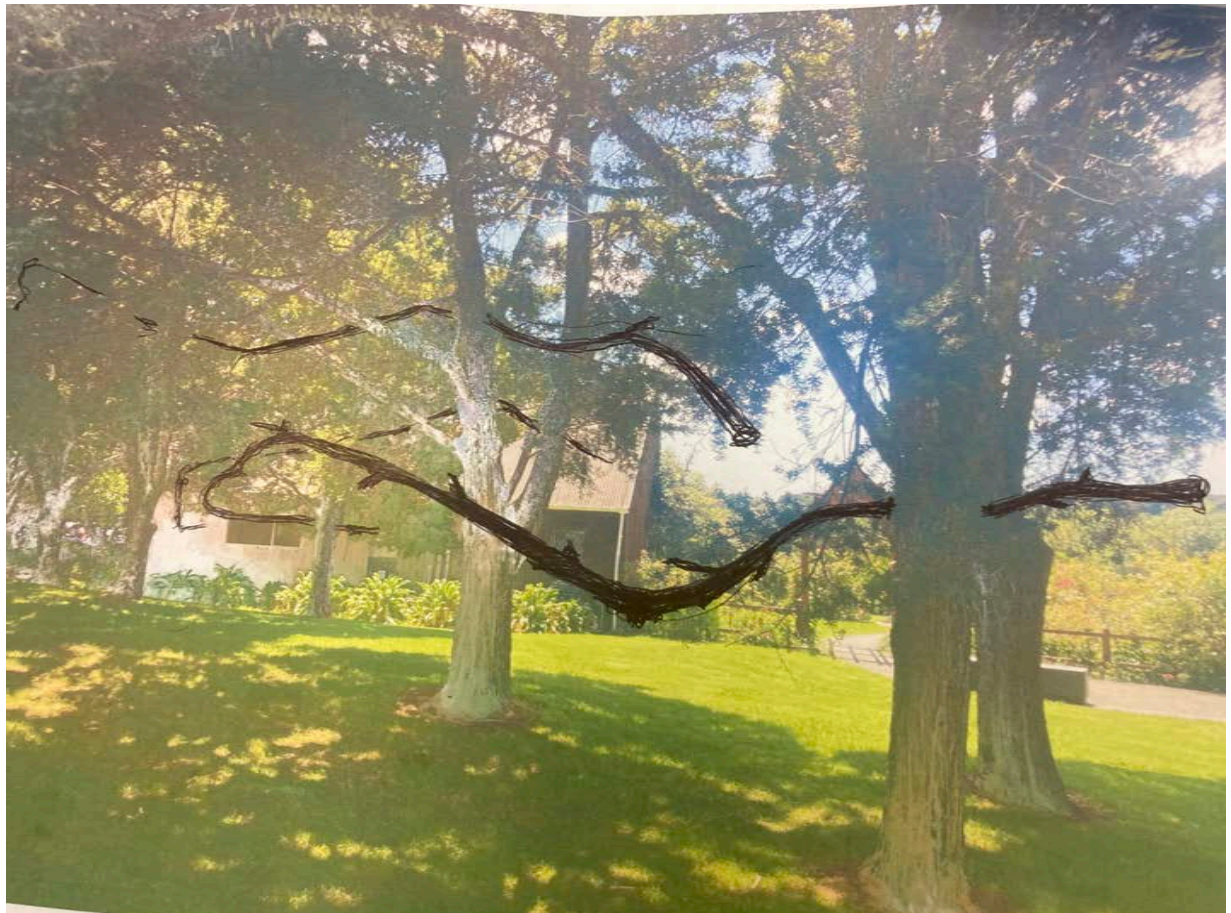
This score will be continually changing, played back through speakers attached to the outer corners of the structure. Refer technical info below re rectangular flare PA horns

Power.

Power will need to be relayed via a cable enclosed in conduit (this can be buried under ground from closest source and does not need to cross a major access road etc. Alternatively solar / battery options will be explored.) There will be no electrical risks re health and safety.

Location: Edible Gardens (refer Map)

Tonal Lines 2.





This is a related alternative work. Considering similar narratives to *Tonal Lines I*, in this work the charred lines are more horizontal, meandering through the live trees.





One - three long continuous lines made from charred branches (collected from felled branches from the gardens that have been scorched to give a charred surface (re image below)



Each branch is scorched then joined to a branch with a similar girth, the joins are loose to enable movement in the wind, dovetailed and loosely connected with pins that penetrate through the diameter of each branch / join. They can swivel and sway. These are suspended with 7 strand steel woven wire from the trees above and linked together (with some looseness for movement and sway in the wind). Each have an array of pick ups/ devices attached to the wire from which they hang so effectively these are operating as aerials/ transducers responding to the surrounding currents and atmospheric vibrations.

This live sound is relayed back to the computer mixed with pre recorded wider eco acoustic atmospheric field recordings, to generate an everchanging algorithmic composition (as per previous proposal). A large spherical horn speaker is hung from within the cluster of trees (10 kg from steel wire (as per fig...)) – this relays the corresponding sound score –

echoing the carbon tone of an HB pencil, this grey PA speaker horn also references modes of emergency and crisis communication systems.



Note The amp/ computer etc is located in the adjacent grounds outhouse (beside toilets/rose gardens). All cabling is encased in conduit and underground with speaker wire and steel wires threaded through the trees with a clearance of 4 + metres from the ground. There are no roads between the installation site and the power source). Compliance and H & S is paramount and all systems will be fully certified etc.

Total weight of suspended wood line should not exceed 35-40 kg and this weight is dispersed over a large area (each line being approx. 15 – 25 metres in length and suspended in parts so each wire holding a max of 10 kgs. This is a system we have used in the past which is effective in all weather extremes.

Location: Area in trees between totara grove and Rose Gardens toilets. (refer Map)

Who Has Seen the Wind? | Christina Rossetti

*Who has seen the wind?
Neither I nor you.
But when the leaves hang trembling,
The wind is passing through.
Who has seen the wind?
Neither you nor I.
But when the trees bow down their heads,
The wind is passing by.*

Technical:

Manmade aerial to pick up VLF



VLF Receiver made from eight-core signal cable and secured with cable ties by composer and media artist Thomas Rex Beverly, Ohio, USA



Speaker horns



Large rectangle flare PA horns – these will be situated on the pagoda structure at each outer corner.

Large round flare PA horns



Guitar pic ups



Contact transducers /guitar pic ups

Durability:

All materials are built for the outdoors and able to operate in variable conditions (PA speakers built for outdoors can sustain wet conditions and weather proofing all cables/ wires etc ensures transmission and reduces risk.

7 strand wove Ssteel wire is elegant and strong, flexible and also enables transmission and vibrations to be picked up. Transducers will be encased in protective boxes and all connections sealed to ensure durability.

Interactive elements will need to be well secured and compliant we welcome related advice re all H & S matters.

Map

