Amazing Grace: How Sweet the Sound of Synthesised Bagpipes

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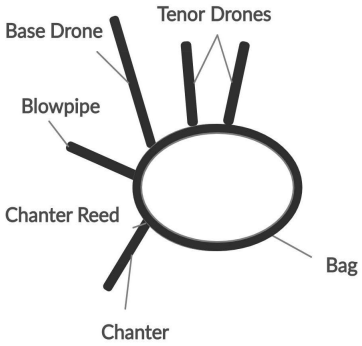
Introduction

- A bagpipe is made of an enclosed reed, a reed pipe, the chanter, drone pipes
- The chanter supplies the note, and the reed is fed from the bag that the operator drives with their arm

Figure 1: Diagram of a Bagpipe



Purpose

To synthesize a bagpipe using Supercollider

Methods

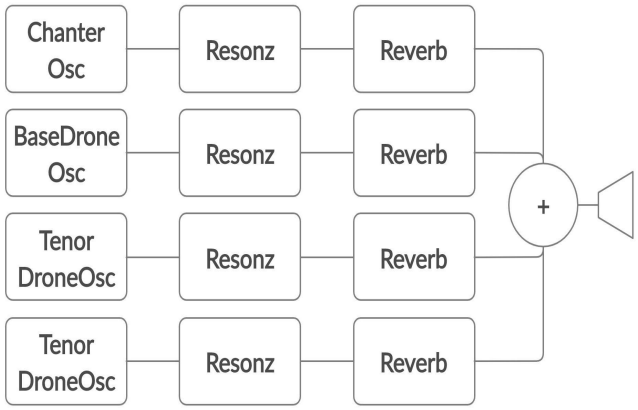


Figure 2: Flowchart of the Synth to an audio output, where Resonz represents a resonator

Methods

- Sheet music to *Amazing Grace* was transposed into midinote values
- Values and Synth were put into a pattern

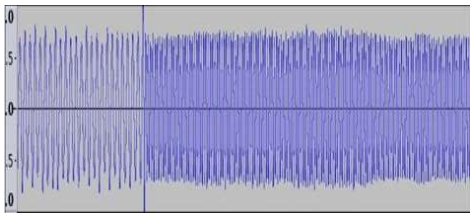


Figure 3: Sound wave of Amazing Grace synthezied

Results

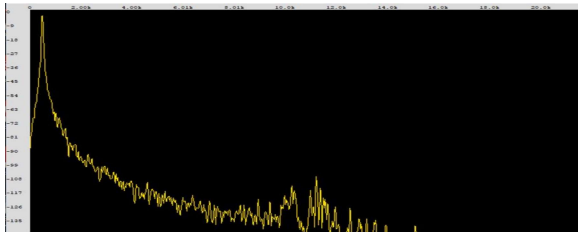


Figure 4: Frequency vs Loudness graph for synthesised version

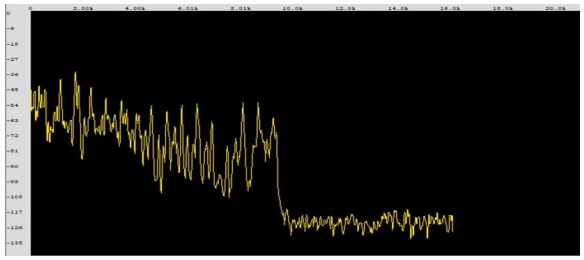


Figure 5 Frequency vs Loudness graph for natural version

Conclusions

- The natural graph has a varied loudness
- The loudness of the synthesied bagpipe drops off in a gardual fashion
- Shows supercollider can produce an approximation of a bagged reed
- Can eventually be used in proformances, and choirs where there are limited memebrs
- Can be used in audio software and audio post production

Literature Cited

A.Hindle, D.Posnett, "Performance with an Electronically Excited Didgeridoo," NIME'17, 2017, pg 222-226

E.Ducasse, "A Physical Model of a Single-Reed Wind Instrument, Including the Actions of the Player," Computer Music Journal, 2003, pg 59-70

Breizh Partitions. Amazing Grace. N.d, Celtic Scores, N.d. Digital

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