

This abstract deals with some of the issues surrounding the composition of the

VLN Suite (Second Study in Extrapolating Beyond Human Performance Abilities)

The VLN Suite is the second in a series of works which deal with the transition from the human to the inhuman, with an awareness of human performance traits taken from psychoacoustic literature. The compositional background to such work might be seen in the work of Nancarrow (Gann 1995), or to pluck one work from the electroacoustic field, Silicon Valley Breakdown by David A. Jaffe (Jaffe 1982, also see Chafe 1999).

The ethos in evoking real human performance was reflected in choices over sound source and processing. It was decided, as in the Cello Suite (ICMC 2001), to minimise extraneous processing effects, and to work from a large database of recorded samples. It was known that too small a database allows one to quickly recognise repeating samples. This database was laboriously constructed over several months, with programming work to handle the data and automate editing taking as much effort as recording and manual editing time. It became a multi gigabyte dual collection of arco and pizz sounds over the tuning system of the work, ranked by RMS power level so as to gain access to dynamic levels. There were around 100 individual samples per single note for a given timbre.

The entire work is restricted to a particular non standard tuning scale, which could not be generated accurately in a human performance, but was possible to intonate by working a note at a time. The scale on a single violin string might be characterised as $(3/2)^{k/24}$ where $k=\{0,5,9,11,12,13,19,24\}$. The four strings (beginning at 196 Hz= equal tempered G3) went up by the just fifth ratio of 3/2, each with the particular quartertone of fifth subset. Whilst detuning samples could have made do, the author's fetishistic desire to have accurate sound (particularly in terms of body resonance, and a large database) required recording every one.

Only once this database was prepared could composing begin. Further C++ software was now written to handle the algorithmic composition procedures desired. Csound provided a convenient final renderer for generating the output soundfiles.

This particular work features the so called Fitt's law (Fitts 1973), that transition time between physical positions on an instrument is proportional to thinking delay and inversely proportional to target area and distance. In the VLN suite, this is part of a basic violin fingering model that is particularly concerned with change of hand position. The model was exploited as a means of causing smooth changes of expression between inhuman accuracy and human hesitancy. The hesitancy could be increased to the point where the performance seemed to be the practice time of a novice, who must think very carefully about where next to place their hand. This is the principle of the prelude, subtitled 'Learning to Play the Violin'.

In total there are eight short movements making up an eight minute work, all using synthesis of expression to some degree. Four are spatialised and four dry:

1. prelude 'Learning to play the Violin' -from human to inhuman.
2. quadruple stops
3. arco 1 (spatialised by babo opcode, Csound, Rocchesso et al)

4. scales1 (spatialised by space opcode, Csound, Karpen, R.)
5. pizz tone row repetitions
6. arco tone row repetitions (space)
7. zithering (space)
8. scales2

Reverberation times were kept minimal or non-existent except for the special booming of movement 3, which resolves into a close mike position then fades into a distant large hall again. The intent for the dry movements is to simulate a lone performer, to give a chamber character. The composer is content for these 'raw, close' movements to take on the reverb characteristics of a location in which the tape piece is performed.

The ratio of arco to pizz movements is 1:3. This was simply a result of the higher quality of results from the pizz database. Of course, percussive sounds required no legato connection, whereas the arco sounds were missing that continuity. Movement 6 simulates long held notes by playing many many short notes simultaneously. It is noticeable that the amount of extraneous noise in the arco database, as a product of short sharp notes, gives a strange timbre to these held notes, but that some fusing is achieved.

There was a point when the composer considered removing all arco movements altogether, and avoiding any spatialisation. But because of the timbral similarity of so many dry pizz sounds, some variation was a compositional necessity. Further, spatialisation is a necessary step for playing with the chamber music conventions.

The experience of making the piece was revelatory. The sheer tedium of preparing the database aside, the speed with which even a large database was used up was incredible. Some of the movements use the entire pizz or arco database twice over, such is the inhuman speed with which things are done. The level of effort, time spent being about four times that of the hard work towards the Cello Suite, proves how difficult it is to produce these transhuman works without the repetitious MIDI sampling quality.

Future works in the series are likely to move onto physical modelling as the sound synthesis method, but the composer feels justified in having carried out these initial studies.

References

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