SEAM PROJECT - SUSTAINED STEREOPHONY

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ABSTRACT

After decades of sound and music technology development, the everyday practice reveals one of the first walking dead: the stereophony. In less than a hundred years from its birth, the stereophony is not only at the end of its comprehension but also at the end of its necessity. The electroacoustic literature has constant focus, through history, to the listening. Listening as a starting point of thinking, as a background of composing, as a long-distance perspective. Actually today we know better than Blumlein how people listen, how ears and brain do what they do. What we lose versus Blumlein, is the necessity of listening, of reproduction, of listening of reproduction.

When the words no longer point themselves we lose, with the meaning, also the reality we used to refer, using them. The transition from the age of mechanical reproduction of reality, through the history of attempts to reproduce it up to the virtual reality, must pass through, preserving and sustaining, that concepts which have defined the necessity of reproduction. Sustaining the electroacoustic literature, the repertoire, means to sustain the necessity of some concepts, like stereophony, and their related consolidated practice, to the perspective of development or, at least, the surviving of comprehension.

1. INTRODUCTION

Sustained Electro-Acoustic Music is a project inspired by Alvise Vidolin and Nicola Bernardini's article [1] on *live electroacoustic music sustainability*.

The main ambition of this project is to grow the interpretation and the electroacoustic musical practice with the consciousness of the electronic and informatics problems that had made arduous to approach this music and prevented the growth of interpretative thinking. It is possible, with a community structure, to determine, build and stratify interpretation of musical core, the repertoire, concealing the environment-related technological issues. They are instruments, not the music itself, after all.

These are the SEAM organisation coordinates:

- `http://s-e-a-m.github.io`
- `http://seam-world.slack.com`

2. PROBLEMS

Why a project about sustained electroacoustic music must focus on stereophony issues? The literature and the repertoire survive thanks to the community activities. Most of those activities require education, strong education about musical matters. The education, even music education, is layered, from roots to top floor of music knowledge. To look inside the twenty-third floor, you have acquired the bottom levels of knowledge, from the roots.

Especially the roots, the elementary concepts, the etymology of the basic lexis, is the most fragile and most violated place of knowledge, a place where stereophony, one of the keywords of the sound realm, just before to lose its meaning still losing its necessity.

During the lessons in Rome Conservatory in which *SEAM* was born and its related problems were shared with classes to sensitize students to community work, the core software used to explode issues was *Faust* [1] . This wasn't a restriction, it was a preference. Text-based DSP offers the deepest learning experience and great expressivity and readability. *Faust* code could be written to educate a musician at the same time with computation versatility and efficiency. The *Faust libraries* concept is useful to focus on write once, and read forever, code. We think *Faust* itself represents a rather concept of electroacoustic sustainability. Thinking, for example, at the *filters.lib* and at the names that contributed the enrichment of speculation around each object, make us wish to a musical interest capable to do community more than with the adoption of other software.

Instruments carved by musical ideas on readable text (code) becomes a sub-literature in which each brick maintain the power of the source code, the clarity of an equation, the efficiency of the continuous development, the reusability of a word in different contexts.

3. ROOTS

> . . . it is fairly well established that the main factor having effect are phase differences and intensity differences between the sounds reaching the two ears, the influence with each of these has depending upon the frequency of the sounds emitted. For low frequency sound waves there is little or non difference in intensity at the two ears but there is a marked phase difference. For a give obliquity of sound the phase difference is approximately proportional to frequency, representing a fixed time delay be-

[1] `https://faust.grame.fr`

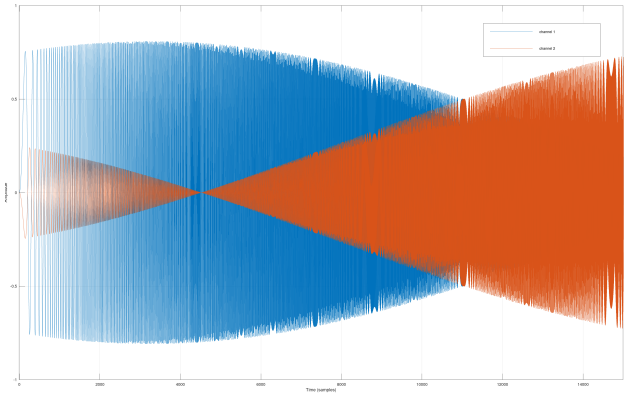
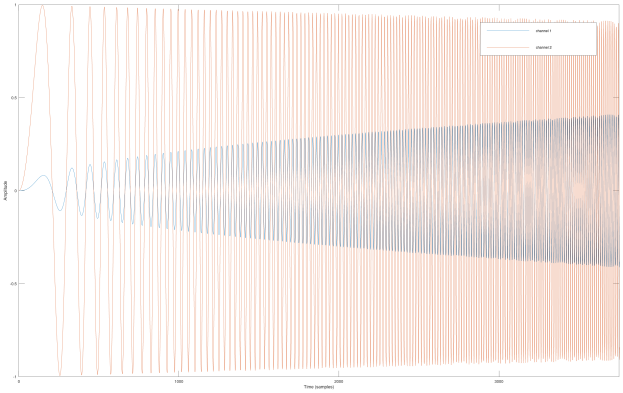


Figure 1. Figure captions should be placed below the figure, exactly like this.



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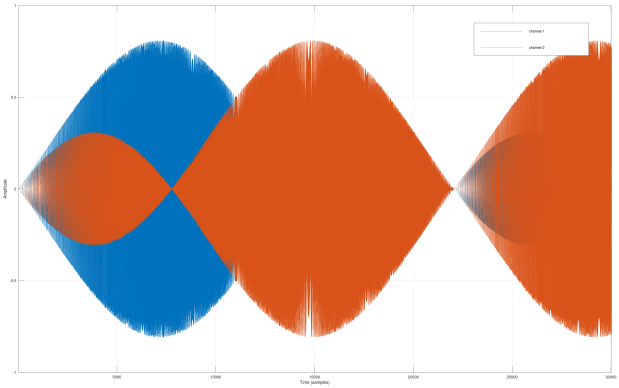

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tween sound arriving at the two ears, by noting which there is a phase difference of pi radians or more between sound arriving at the two ears from a source located on the line joining them: but above such frequency if phase difference were the sole feature relied upon for directional location there would be ambiguity in the apparent position of the source. At the stage however the head begins to became effective as a baffle and causes noticeable intensity difference between the sounds reaching the two ears, and it is by noting such intensity difference that brain determines direction of sounds at higher frequencies.

. . . the frequency at which the brain changes over from phase- to intensity-discrimination occurs at about 700cps. . . . inn any case the transference is not sudden or discontinuous but there is considerable overlap of the two phenomena so that over a considerable frequency range differences of both phase and intensity will to some extent have an effect ion determine the sense of direction experienced.

The invention also consists in a system of sound transmission wherein the sound is receive by two or more microphones, wherein at low frequencies difference in the phase of sound pressure at the microphone is reproduced as difference in volume at the loud speaker.

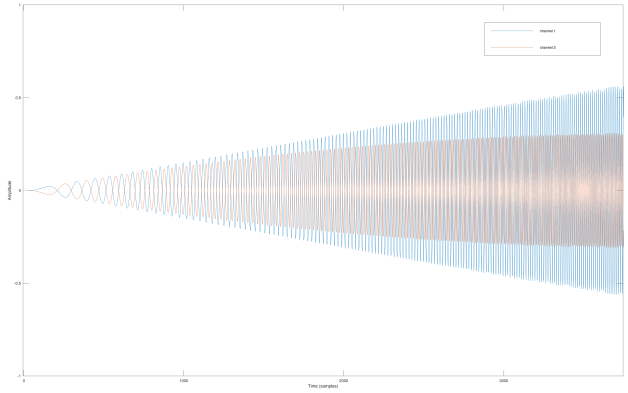
4. MID-SIDE PANNER

```
mspan(x,rad) = m,s
  with{
    m = (0.5*x)+(0.5*(x*cos(rad)));
    s = x*(sin(-rad));
};
```

```
import("stdfaust.lib");
import("../faust-libraries/seam.lib");
```

5. REFERENCES

[1] N. Bernardini and A. Vidolin, "Sustainable live electroacoustic music," *Sound and Music Computing*, 2005.



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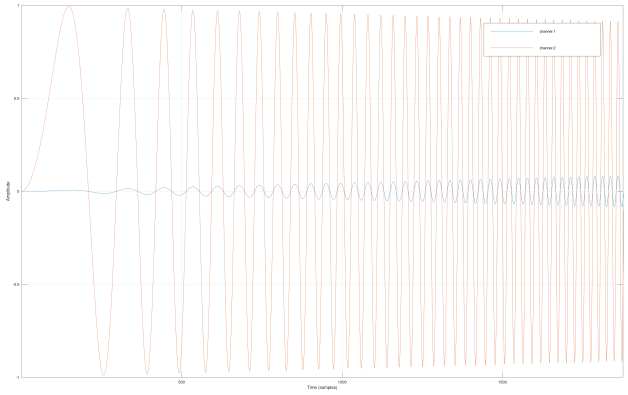

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