to do list

- A to A module
- comparison omni, stereo, soundfield?
- octave plot of shape with pitch colours
- path to loudness
- shape of chromatic scale
- shape of density
- shape of berio seq IXb
- mono to stereo strategy

OMNIDIRECTIONAL POINTS OF LISTENING

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ABSTRACT

Place your abstract at the top left column on the first page. Please write about 150–200 words that specifically highlight the purpose of your work, its context, and provide a brief synopsis of your results. Avoid equations in this part.

1. INTRODUCTION

The core of this research is about the *equilibrium* of acoustical and electroacoustical sources for music performances and mixed media concert environment.

The starting point is the assumption that there are not shared characteristics from both acoustical and electroacoustical sources. Acoustical sources, their pressure and power on air, came to ears through the full space in a *transparent* way. Loudspeaker, the best one, push air in partial space in a *visible* way.

Acoustic differences from mixed sources may cause distraction and distortion of acoustic reality.

First remarkable step into this conception is clarify the stereo concept by the assumption that we consider stereo a listening attitude an call stereo a technology able to reproduce sound with directional informations and the illusion of audible perspective.

Stereo is a listening attitude and not a reproduction channel array.

2. HISTORICAL ROOTS

In the beginning was the tetrahedron. Despite its greek roots, we know the Tetrahedron only through Michael Gerzon [**?**] postulations. Michael Gerzon, better than Pitagora and Euclide, understood the efficiencies of tetrahedral shape for omnidirectional sound description.

small description of what of ambisonic will referenced

The *S.T.ONE* project (*Spherical Tetrahedral ONE*) grew up from the need of an electroacoustic environment in which acoustical and electronic instruments have the same impact on listeners.

A traditional loudspeaker could be controlled only on dynamic dimension of power. This power control can't establish complete balance of each aspect of sound propagation for acoustical instruments. Each acoustical instrument have a complex propagation that combine dynamics, timbre and sound shape relationship. This difference, between instruments and traditional loudspeaker is responsible of unglue from acoustics and electronics.

S.T.ONE is a tetrahedral loudspeaker able to reproduce spherical sound field. to be conitinued?

TETRAREC is a spaced non-directional microphone technique based on tetrahedral shape. to be continued?

3. S.T.ONE

The *S.T.ONE* loudspeaker define a simplest way to design spherical sound shape. to be continued?

Omnidirectional point of listening as synthesis of sources not space. Space synthesis through sources synthesis. to be continued?

Photos

Schemes

cad

The first work for S.T.ONE is *Attraverso la lente* (*through the lens)* an acousmatic work by Giuseppe Silvi (2009) five years before first S.T.ONE loudspeaker was made. The work came from strong knowledge of principles of tetrahedral sound description, without the same knowledge on loudspeaker design. When the project was ready, on 2014, the first stage of development involved a spherical sound diffusion technique of acousmatic music (*EMUFest 2014*) while a research path concerning the *Sound Shape* of traditional instruments was taking place.

The *Sound Shape* is the perceived shape of an acoustic object. During the recording of *13 Degrees of Darkness* (A. Lucier, for and pre-recorded flute, performed during EMUFest 2014) the ***TETRAREC*** technique for *Sound Diffusion* recording of acoustical instruments was developed.

With *S.T.ONE* and *TETRAREC* a new approach to electroacoustic music is possible for a better integration between acoustical instruments and electronics.

S.T.ONE is a product of this research, where live performance with balance between acoustical and electronics is complete, poly-dimensional and completely new to audience.

With *S.T.ONE* loudspeaker you could control sound reproduction in each direction of space and integrate each control on a dedicate music composition approach.

3.1 Mono to Stereo Strategy

In traditinal panning, or amplitude panning, the natural approach to move mono sounds in a determinate position is related on array of loudspeaker .

With STONE a strategy for stereo diffusion of mono sources should be bla bla bla mono eq shape etc

3.2 Stereo from one point of listening

Consider stereo as attitude of listening permits strategies for sound reproduction without predeterminate rules on number of loudspeaker. A single STONE loudspeaker should reproduce stereo sounds from one point.

3.3 AtoA module

Gerzon's A-Format and STONE have twisted destinies

4. TETRAREC

5. SOUND SHAPE

On sound shape concept.

5.1 Chromatic Shape

Plot della scala cromatica di un sax e di un flauto

5.2 Density 21.5 Shape

Plot di density

5.3 A Berio Shape

plot della sequenza IXb

6. *PS: SONG #01*. CASE STUDY.

pasquale citera compila questa parte musicale
il materiale audio sia elettronico (bformat) che tetraedrico pu essere analizzato da marco.

7. CONCLUSIONS

To finish your full-length paper, end it with a conclusion; and after careful editing and a final spell-cheek, submit it through the Conference Web Submission System. Do not send papers directly by e-mail.

Acknowledgments

You may acknowledge people, projects, funding agencies, etc. which can be included after the second-level heading "Acknowledgments" (with no numbering).

8. REFERENCES

[1] M. Gerzon, "Ambisonics. part two: Studio techniques," *Studio Sound*, vol. 17, pp. 24–26, 28, 40, August 1975.