

Composer / researcher

Dimitri Voudouris

Composed

(2018-2020)

Composition

**SY-mplexi**

Duration

13 min 09 sec

4 x Groups (performers, improvisers)  
*4 x Short-wave receivers (Grundig Satellit 3400 Professional),  
Assorted metallic percussion, DIY ( 2 x condenser, 8 x contact )  
and 3 x Dynamic microphones, ecologically-based C++ granular  
synthesis, computer assisted processing*

## **Composition model:**

Short-wave transmissions often have bursts of distortion, and "hollow" sounding loss of clarity of certain aural frequencies, altering the harmonics of natural sound, creating at times a strange "spacey" quality due to echoes and phase distortion, mechanical rhythms all becoming densely compacted until a point is reached where abstraction sets in. Granular textures and combinations of sound fragments are replicated on the computer with variations in register, volume, duration, density ("segmentation"), rhythmic structure, and dynamics creating a mass of sound from each of the regions which share comparable characteristics and selective points of interaction are established.

**SY-mplexi** derived from Greek meaning *engagement* follows the guided organisation of fragmented thought patterns. Sound fragments can be compared to fragmented thought (the larger the audio library the larger is thought fragmentation, thus it is more difficult or takes longer to place one's thoughts in a collective and decisive order). Selection and placement of sound fragments require various levels of concentration where decision making follows an order which aims to develop perseverance and problem-solving strategies that support the building of performer and improviser-driven knowledge. These strategies are streamed together to create one collective source of communication through four geographic sound fields this took place between August 2019 to March 2020.

## **Formation and activity of groups:**

Performers and improvisers were chosen to exercise their abilities in analyzing, selecting, recording, isolating, and categorizing sound material in groups or individually as well as the constructing, positioning, and the placing of fragmented sound material into a composition module. The outcomes of the work relied heavily on interactions between group and individual personalities. The participants were placed into four groups and were assigned tasks with various acoustic and electronic combinations to develop their skills.

The participants attended 10 days of theoretical and practical courses:

- 1) **Wireless transmission** which focused on areas such as radio communication, electromagnetic spectrum, frequency and wavelength, radio bands, surface (or ground) waves, sky waves, space waves, amplitude modulation, frequency spectrum, depth, and frequency modulation.
- 2) **Field recordings preparation in approaching simple and complex environments** - Types of mics used in recording, combating wind, setting up mics without disturbing the environment.
- 3) **Familiarity with sampling and recording equipment.**

The work produced by each of the groups is an interaction of both acoustic and electronic sound expressions composed within the four regions. Each region represented was assigned to each of the four speakers: e.g. Speaker 1: Northern, Speaker 2: Southern, Speaker 3: Eastern, Speaker 4: Western hemispheres with or without acoustic percussion.

The exercise consists of four steps to develop the learning skills for musicians:

Step 1- Field recordings and combination of environments with acoustic instruments - focuses on recording practices, the familiarity of musicians with various interacting environments.

- *Natural environments with or without foreign infiltration, the blending of which would be difficult to distinguish between the two media.*

	Group A	Perf	Imp	Group B	Perf	Imp	Group C	Perf	Imp	Group D	Perf	Imp
Step 1		5	5		2	8		5	5		10	

Each of the 4 groups had 10 participants of which five had DIY skills in amateur radio assembling.

1. Musicians from each group are to enter the natural sound field and make recordings of moments that captured their attention.
2. Fine-tune their acoustic instruments and perform with sounds in the environment.
3. Blending intervention between the instrument and environment should complement each other.
4. Each member of the group is to submit a (120 sec) multitrack recording of the raw sound, not stylized with effects.
5. The submissions need to identify the environment (in short describe the recorded environment), specify the natural sound they are interacting with, and the type of instruments used.
6. Participants whose recordings were selected are categorized, saved, and stored under the musician's particulars in this Step and allowed to proceed to Step2.
7. Musicians who do not meet the selection process face elimination from the group.

Step2- Analysing, dissecting various natural sound environments focusing on two neologisms: geophony (used to describe one of three possible sonic components of a soundscape. It relates to the naturally occurring non-biological sounds coming from different types of habitats, whether marine or terrestrial) biophony (used to describe the collective sound that vocalizing animals create in each given environment), recorded in the early hours of the morning, afternoon, early and late evening. Exposing the musicians to various sound fields reconstructing and combining them with artificial sounds from radios, reeds, percussion.

	Group A	Perf	Impr	Group B	Perf	Impr	Group C	Perf	Impr	Group D	Perf	Impr
Step 2		4	3			6		2	3		8	

Step 2 is made up of **Group A:** 4 (performers), 3 (improvisers), **Group B:** 6 (improvisers), **Group C:** 2(performers), 3(improvisers), **Group D:** 8 (performers)

In this section, the musicians were to search within the natural sound fields, to understand their interactive forms, functions, operation, creations, duration, existence, within the various energy-fields. Dislocating the vibrations which compose the natural sound gives birth to formidable energy compared with that of particles. In a state of chaos, the selection of particular sound moments becomes more difficult and requires focus and concentration to re-construct and create soundscapes. Participants were left to make practical choices through self-realization.

*The musicians discover and attempt to re-construct soundscapes from various natural sound fields in the early morning, afternoon, evening in the environment.*

1. Instruments used were metallic percussion, reeds, and radios.
2. Avoid tuning, use the radios and acoustic instruments, and blend sounds with the soundscapes they constructed, in short, describe the recorded environments and the blending process which was followed. Create (60sec) multitrack recordings.
3. The submissions undergo a selection process, musicians whose recordings are selected are categorized, saved, and stored under the musician's particulars in this Step) they are then allowed to proceed to Step3.
4. Musicians whose recordings are not selected face elimination from the group.

Step 3- Positioning of microphones combining with shortwave receivers, metallic percussion with natural environments.

	Group A	Perf	Impr	Group B	Perf	Impr	Group C	Perf	Impr	Group D	Perf	Impr
Step 3		4	3			5		2	2		5	

Step 3 is made up of **Group A:** 3 (improvisers), 4 (performers), **Group B:** 5 (improvisers), **Group C:** 2(improvisers), 2(performers), **Group D:** 5 (performers)

When creating a Brownian motion the force is no longer the sound of music but that of physics. One has to agree with physics to listen to its laws.

1. Searching for frequencies within the radios creating various electronic environments and combining these with its three neologistic sonic components (geophony, biophony, anthrophony), the outcomes need to be disclosed separately to the composer giving a particular reason for specific choices made.
2. Positioning and selection of DIY: condenser and dynamic microphones, to capture the sound needed to isolate and eliminate particular sounds (without any computer treatments) require practice, disclosure, selections, and positioning. Four (60 sec) multitrack recordings showing, unique and contrasting features) were presented to the composer.
3. Musicians recordings selected, categorized, and stored under the musician's particulars were allowed to proceed to Step4.
4. Non-selections face elimination from the group.

Step 4 - Final recordings presented: Short-wave receivers, percussion, microphones are the instrument of choice in which environments are chosen focusing on specific areas of projection. Through short-wave receivers, each group is given one of the hemispheres to engage North, South, East, West, recording sessions are to be executed separately within each group.

	Group A	perf	Imp	Group B	perf	Imp	Group C	perf	Imp	Group D	perf	Improvisors
Step 4		2	2			4		2	2		4	

Step 4 is made up of **Group A:** 2 (improvisers), 2 (performers), **Group B:** 4 (improvisers), **Group C:** 2(improvisers), 2(performers), **Group D:** 4 (performers)

In this final crucial period of recording selections, eliminations, and the combining of audio phonic sound collages with percussion, arriving in a deeper state of concentration was necessary.

I experienced the pulsation of the sound source.

I had thus the revelation of the fundamental rhythm of life, the natural Hauptrythmus all the rest appeared to be explicit, artificial. I had the revelation that fundamental rhythms are different from rhythms of musical culture. This new revelation, I then "combined" with ideas that I had configured on science, semiotics of numbers, numerology.

I considered each number figure corresponding to a rhythm having a unique individuality and aesthetic in itself. It is not a quantitative difference but of essence.

#### Instructions for groups and performers:

1. The performer is instructed to play a series of events.
2. An event may be played with either radio and percussion or with radio or percussion.
3. Each event has a distinct duration defined by its subdivision into segments with a characteristic rhythm.
4. They are instructed to analyse the sounds that were recorded, decisions are made whether to not process or to process sound.
5. Performers need to follow certain criteria:
  - a] To leave the recorded sessions untouched.
  - b] Loosely process parts of the sound: acoustic, electronic or both.
  - c] Fully process the session the outcomes been the formation of particular tone colourations.
  - d] In the final process removing undesirable frequencies by filtration from the final score.
  - e] No repetitions in the construction of parameters are allowed, this is to transcend the previous limits reached in the peace, but also to go beyond the limitations of their instruments.

## Proceedings in the creation of interlocking combinations

*The proceedings and recordings were performed live in the studio.*

*Together with multitrack recordings presented to the composer, each group as a whole needed to agree on choices made regarding the recordings and had to substantiate reasons for specific choices made in the final result.*

*D.I.Y microphones created a desirable restricted frequency-range of sound that was selected and recorded. The recordings could be split into various frequency ranges on the computer by using normal standard microphones and multi-band compressors, however, it was more challenging to focus on what had been recorded from the primary source.*

*Recordings were judged on methods used to assemble the composition and on the interlocking combinations within a layer or within the scope of other layers a state of inclusiveness and completeness had to be reached.*

*The final constructed material collected from four hemispheres is assigned to four specific levels or layers.*

*Each sound construction is complete and allowed to self exists on its own without assistance from other levels.*

*It would be equally important for each layer to interlock with all other layers providing subtle communication between electronic and acoustic media.*

*SY-mplexi was created for four channels disclosing 4 interactive communication possibilities, reducing it to two channels forces the listener to delve deeper within the various sound fields to retrieve information.*

*In this step recordings are categorized and stored under the name of the group's, failure to meet these standards would result in the elimination of the recording/s presented.*

**The composer** had an opportunity to raise issues with each of the four groups regarding the final submission. Due to the numerous unresolved problems encountered by each group with regards to composition, the composer had to step in to assist or even reconstruct the submission/s, also further work with allowing the inclusion and interlocking areas in each level. With the use of effects offered by GRM tools and ecologically-based C++ Granular synthesis (where the total spectral result is produced by the interaction of the local waveforms with the mesoscale time patterns. Thus, the output is characterized by emergent properties, which are not present in either global or local parameters). The presence of each group in the changes and interactions had to agree.

It was of utter importance to identify the areas of correction and not to interfere with the sonic quality of the work produced by each group.

Groups of musicians in the final participating selection of SY-mplexi

**Project session 1:**

*Andrea Jay - short wave receiver, computer*  
*Stacey Winkler - short wave receiver, computer*  
*Lawrence Frith- assorted metallic percussion*  
*Jaqueline Bishop - sound engineering*

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**Project session 2:**

*Monika Stevens - short wave receiver*  
*Johan Van Wyk - short wave receiver*  
*Ted Theodoropoulos - assorted metallic percussion*  
*Mark Behrens - computer, sound engineering*

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**Project session 3:**

*Jasper Greyling - short wave receiver, computer*  
*Raymond Singh - short wave receiver, computer*  
*Geoffrey Smith- assorted metallic percussion*  
*Marcus Botha - computer, sound engineering*

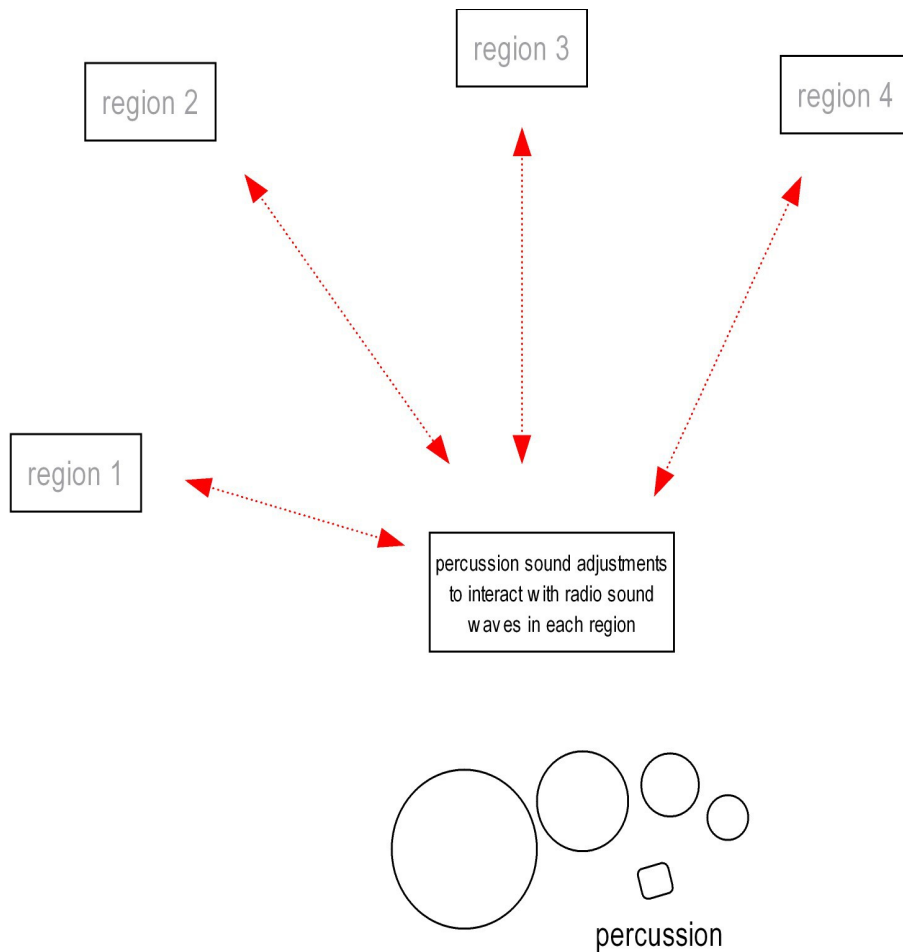
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**Project session 4:**

*Paula Meintjies - short wave receiver, computer*  
*Moira Jenkins - short wave receiver, computer*  
*Leonard Van Niekerk - assorted metallic percussion*  
*Jap Vosloo - computer, sound engineering*

## Acoustic and electronic sound interaction:

Interaction of percussion with the radio sound waves from each region required specific alterations in the way the frequency, pitch and various densities of sound interact in each region.

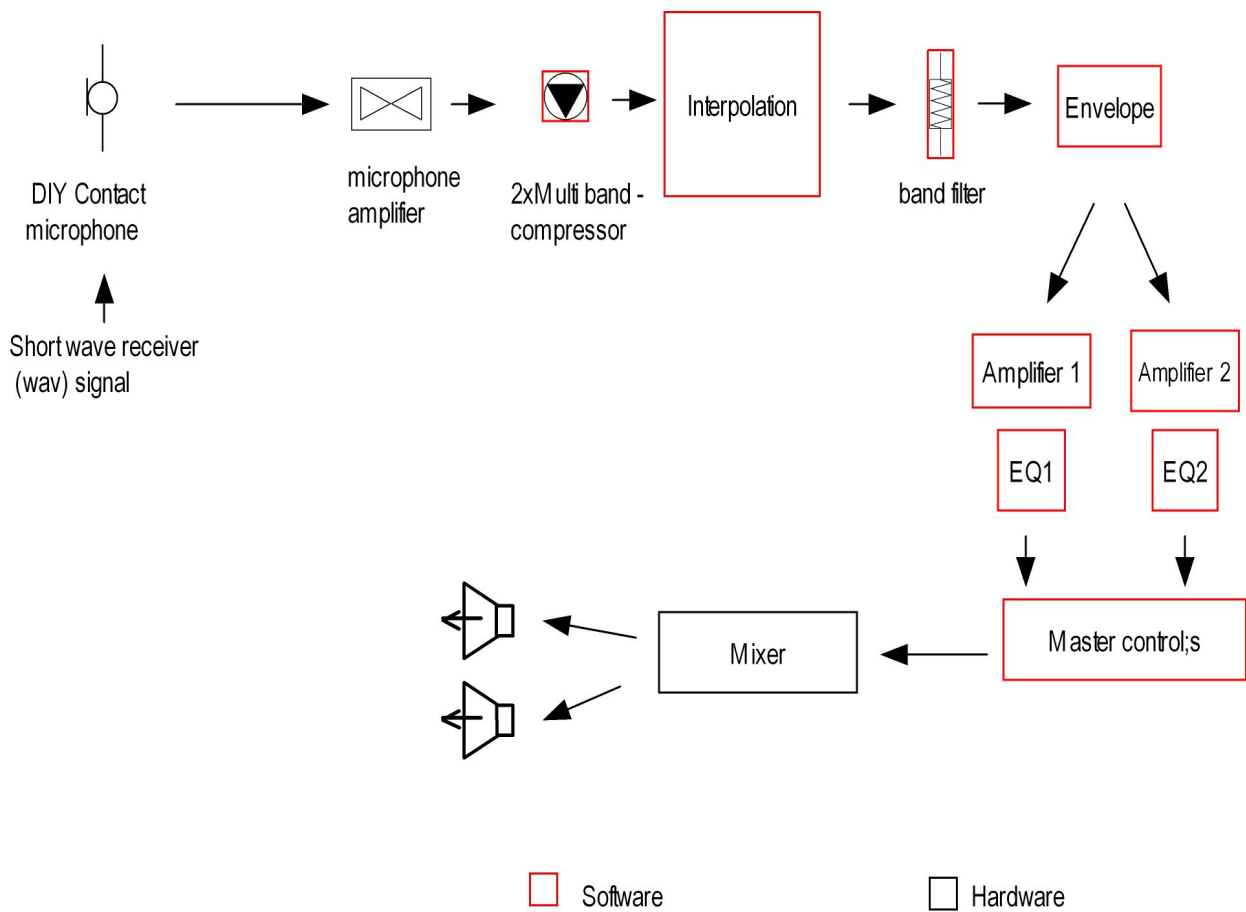


*Interacting generated acoustic sounds with radio sound waves*

Fig:1

The output pressure is audible as tone of the constant pitch, transforming energy chaos into solitary sound blocks. The limitations of output pressure imposed on the final sound either in single or multiple layers interact in parts to dissipate into non-audible existence or transforming into a new sound field.

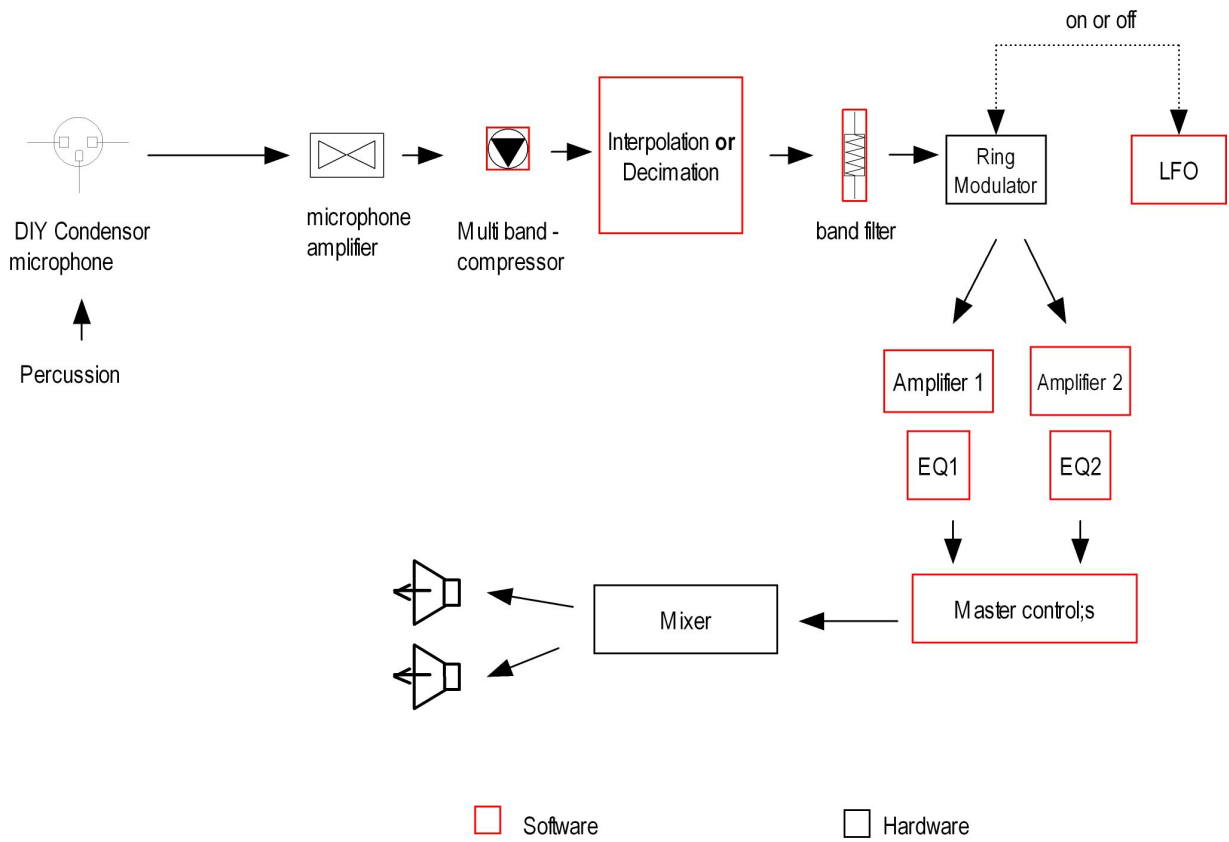




SY-mplexi (35) - Region 4 / Spk 4 : (6 m .37s - 6 m 44s)

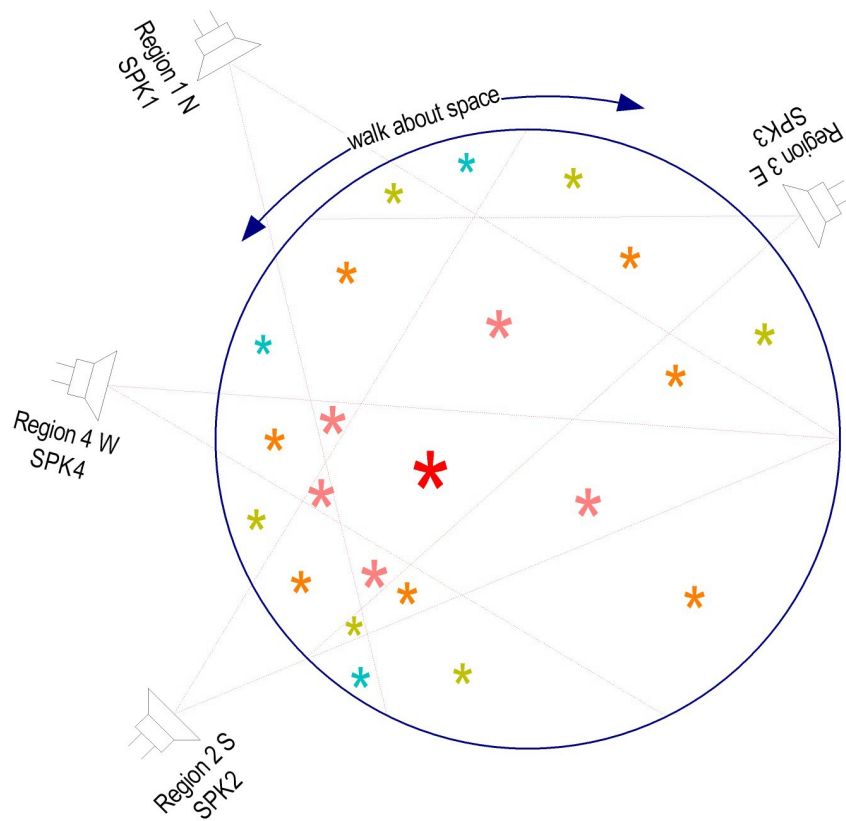
Fig:2a

A sample could be played or used more than once were various interpretations of one sample could have different outcome results, not in a manner which enhances repetition but abiding by the sound pattern of nature which does not repeat itself in a predictable constant manner, but in a more complex form. The computer software allows the interpretations to achieve a high level of precision and transparency. Through the process of intermodulation a higher unity is reached; a universality of past, present and future.



SY-mplexi (12)- Region 3 / Spk 3 : (2 m 48 s - 3 m 20 s)

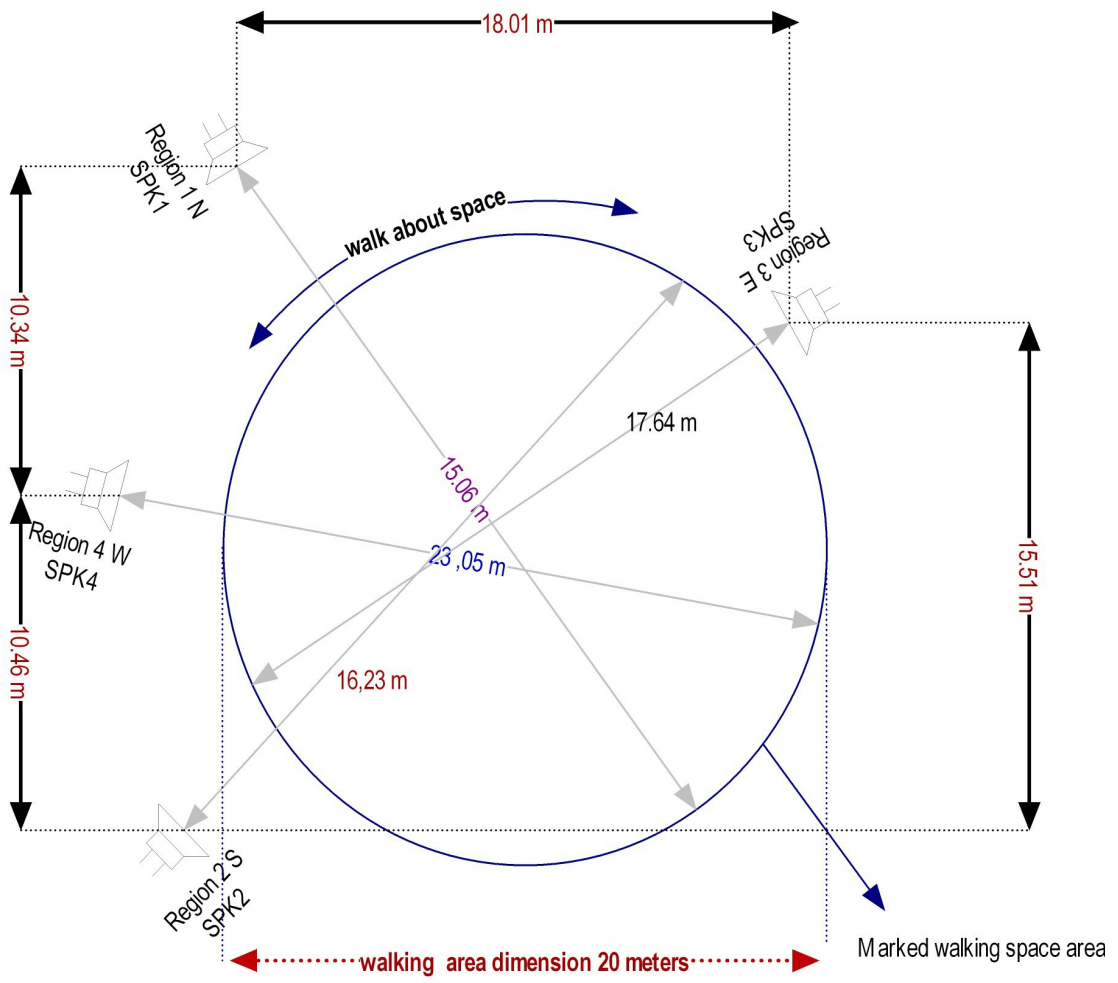
Fig:2b



- \* sound density very high
- \* sound density high
- \* sound density low
- \* sound density intermediate
- \* sound density very low

**SY-mplexi:** *sound projection and density*

Fig:3



**SY-mplexi: dimesions and positioning**

Fig:4

## **In Conclusion:**

The psychological impact that computerized sound has on the cognitive ability of composer / performer / improviser to follow mental processes such as attention, perception, semantic & episodic memory concepts, categorization reasoning, decision making, procedural, conceptual learning, and consciousness, are continuous communication possibilities in processes, interacting at all times with these four entities in the creation of the composition.

In previous years I established an algorithm in Matlab to tackle all the above problems. The engagement of participants performed similar analytical and selection tasks to the algorithm. One can visualize their capabilities as individual processes were execution and decision making are tackled within groups or individually, the final result is passed on to the composer who has different analytical and skeptical opinions. In the end selections and composition, matters are voted democratically.