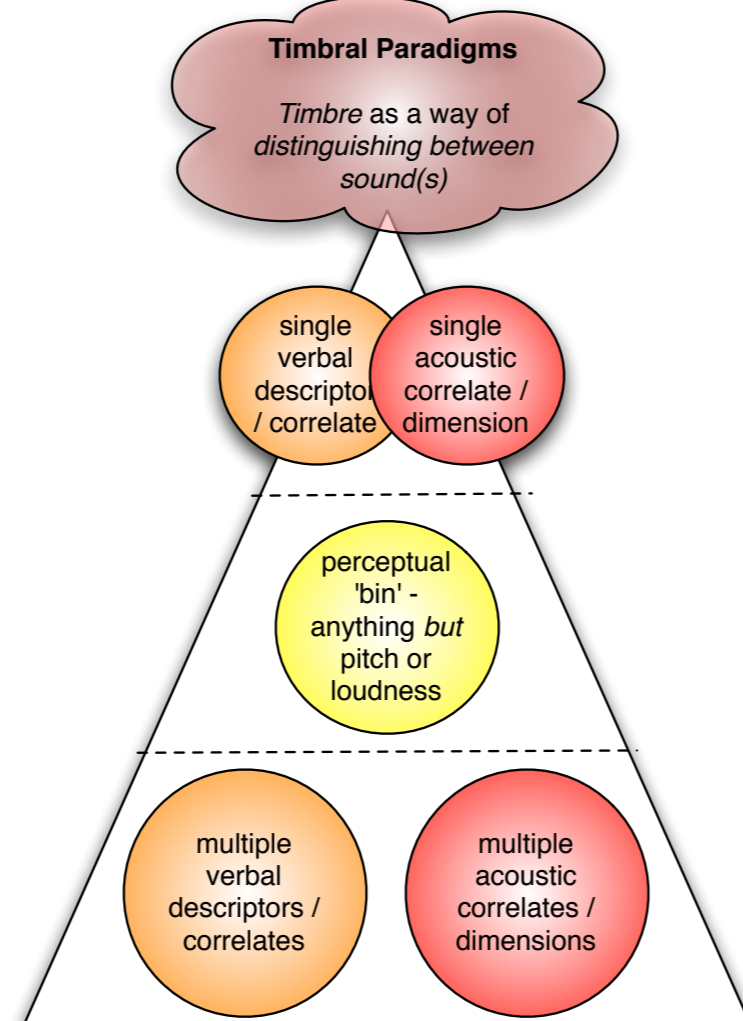


# Evaluating Timbre in Location Recordings

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## Introduction

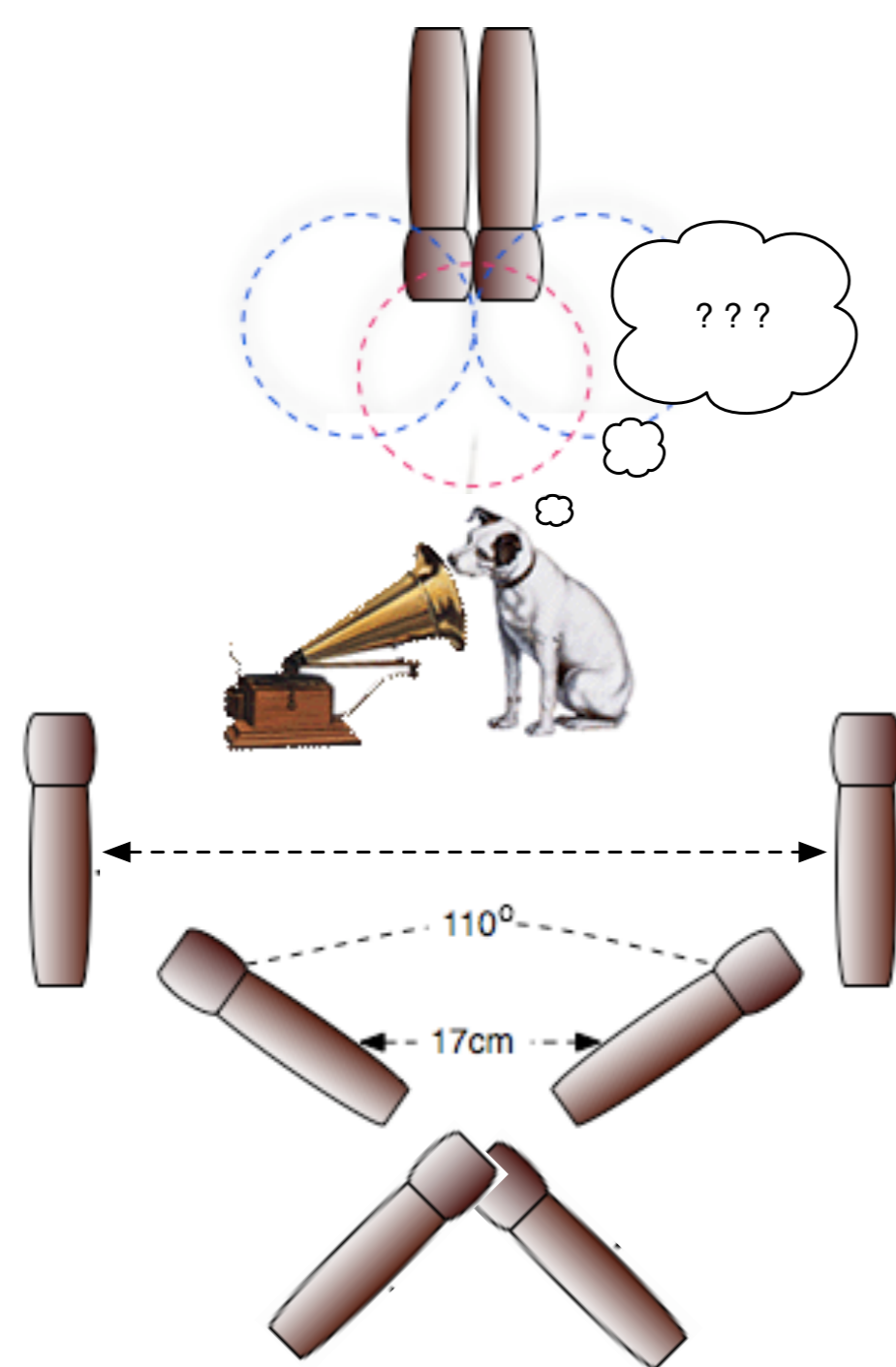
The aim is to quantify attributes within an adopted timbral paradigm, with both meaningful descriptors and multidimensional acoustic correlates



**To manipulate timbre we have to measure it first**

## ... but how?

Microphone techniques selected by literature review (ORTF, M/S, A/B, X/Y) and operated simultaneously to create stereophonic test stimuli from the same source

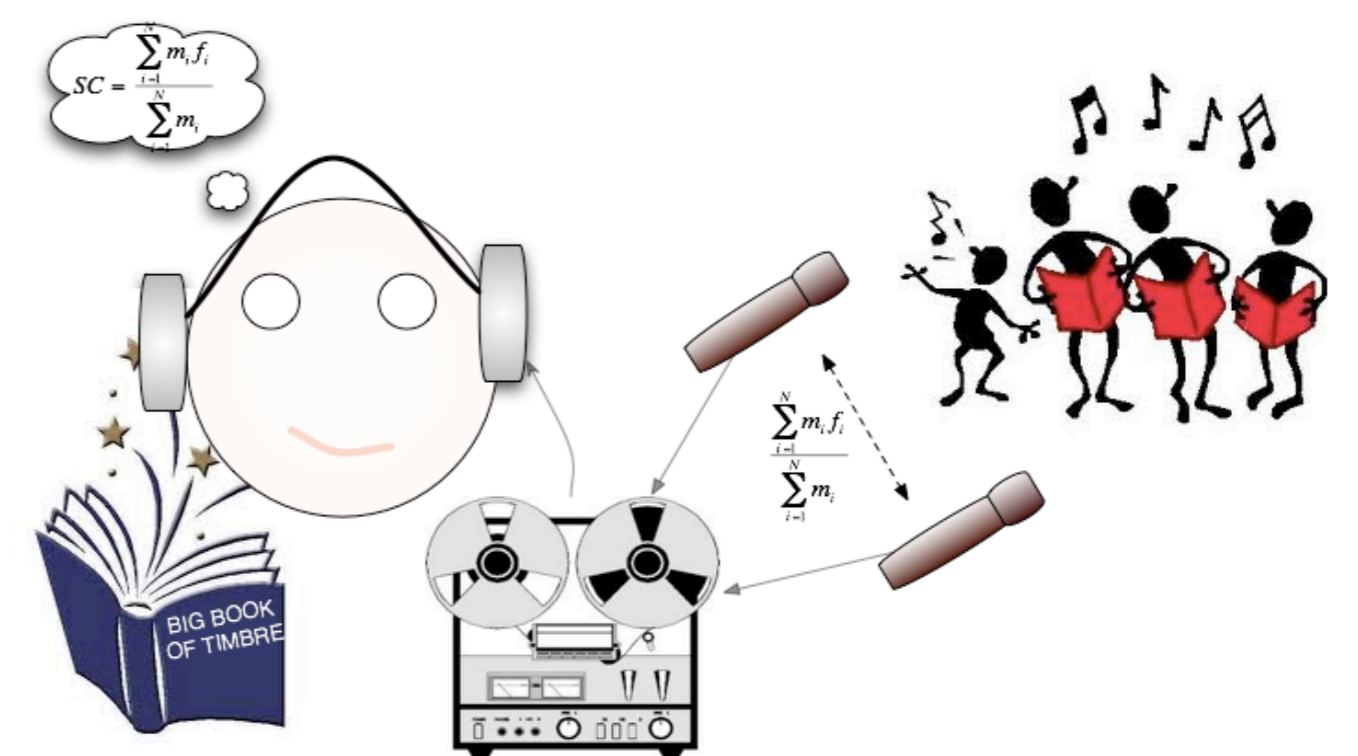


**Stimuli were evaluated in two distinct experiments; i) pairwise dissimilarity and ii) verbal elicitation**

## ... So, now what?

Statistical evidence and acoustic analysis indicated that width, clarity, and thin/thickness can be adjusted by means of basic microphone technique

(within the boundaries of the stimulus source and location used)



## Ideas for further work include:

- Record and evaluate additional source types
- Illustrate hierarchy of timbral attributes
- Carry out perceptual evaluation of **most common / least overlapping attributes** in variety of source types
- Determine metrics** for most common / least overlapping attributes

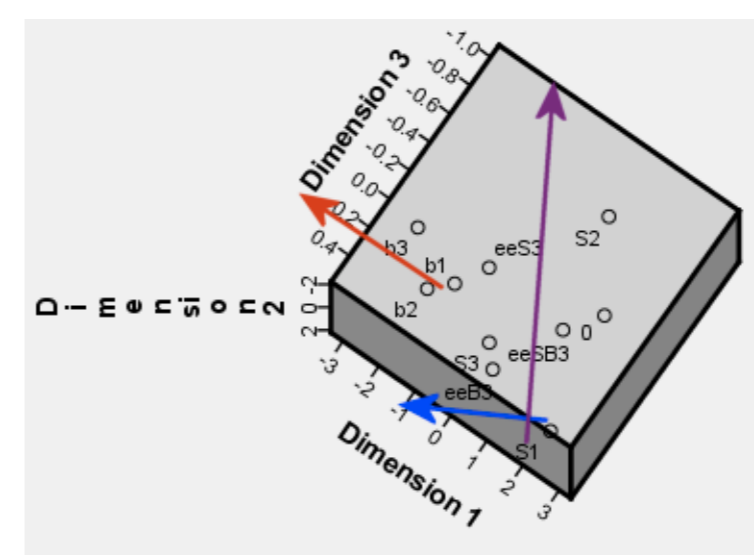
## Did it work?

**Multidimensional Scaling analysis** of pairwise responses (MDS) shows movement in a 'timbre space'

Statistical indicators used were:

- s-stress < 0.1
- RSQ decrease < 0.05
- overall RSQ > 0.95

Together, these indicated best fit/**number of dim** ≈ 3



**Verbal protocol analysis** indicated *width*, *clear/bright*, and *thin* as probable labels for each of the directions

**Acoustic analysis** showed clear correlates for these variations in spectral envelope and phase (head related transfer function / inter-aural cross correlations)

## References

1. ASA, American Standard Acoustical Terminology 45 'Timbre' (1960)
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4. D. Wessel, 'Low Dimensional Control of Musical Timbre' CMJ, 3:45-52 (1999)
5. J.M. Grey 'Multidimensional Perceptual Scaling of Musical Timbre' JASA 61(5):1270-77 (1977)