

MUSIC AND LANGUAGE INTERSECTIONS IN 20TH CENTURY POST-TONAL MUSIC: OVERLOOKED OPPORTUNITIES FOR RESEARCH IN COGNITIVE NEUROSCIENCE

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There is a significant amount of recent research on cognitive neuroscience dealing with language and music intersections [Deutsch (1991, 2004), Lewman (1992), Aiello (1994), Besson & Schön (2001), Cross (2001), Lerdahl (2001), Marler (2001), Molino (2001), Patel et al (1997, 1998, 2003), Levitin (2003), Peretz (2003), Koelsch (2004), McMullen (2004)]. The kinds of musical material generally used are synthetic tone sequences or a limited repertoire belonging to the classic-romantic Western common practice or popular music. We are interested in the consequences of a more extensive use of contemporary music in this type of research. To this end, we have compiled

a number of pieces created in the 20th century that offer an opportunity to review widespread assumptions about the categorizations implied by the words "music" and "language". Our goal is to formalize in a systematic and intuitive manner the space in which music and language intersections occur. We developed a bi-dimensional representation of this space, allowing for a comparative analysis of basic aspects concerning music and speech in selected pieces. This work reflects our perspective as composers and our belief that the utilization of this repertoire can broaden the scope of the questions posed in the field of cognitive neuroscience.

INTRODUCTION

+ Text intelligibility and the dichotomy between singing and speaking have been important issues in compositions including the human voice.

+ New means of sound production, transformation and delivery have expanded the ability of composers to go beyond some of the intrinsic limitations of the human voice as well as of the acoustic instruments.

Goal

+ Formalize the space in which music and language intersections occur by means of a bi-dimensional visual representation of it, allowing for a comparative analysis of the relative music-speech aspects in certain sonic examples.

Repertoire

+ Sonic examples that invite fundamental questions about the boundaries between music and speech were chosen according to the following criteria:

- Vocal sounds in any imaginable form should play a relevant role in it. Synthetic sounds that emulate speech or other vocal behaviors also qualify.
- Representative of one of the various post-tonal musical structuring processes that flourished throughout the 20th century.

+ We also refer to other genres and two non-Western musical traditions, in order to help us clarify the limits of our model.

SPEECH AND MUSIC SPACE

+ Horizontal axis: ability of a listener to comprehend the meaning of a spoken text. Any vocal expression that cannot be parsed or makes no grammatical sense is considered unintelligible; towards the other extreme the vocal expression becomes more and more linguistically organized, until it finally becomes meaningful.

+ Vertical axis: continuum between music and speech (perceived position of a given example as either music or speech in a traditional sense). Normal conversational speech using meaningful and well-formed grammatical structures carries the highest degree of speechness and intelligibility.

Ideal listener

+ The intelligibility dimension obviously requires that the listener understands the language in which the text is presented. In music, text intelligibility contributes to the shaping of different styles and their historical study.

+ The speech-music dimension presupposes a listener who is willing to look for the musicness in speech, or the speechness in music. Such an active listener is able to put aside traditional prejudices that confine a sonic event into either one of the categories of speech and music.

CONCLUSIONS

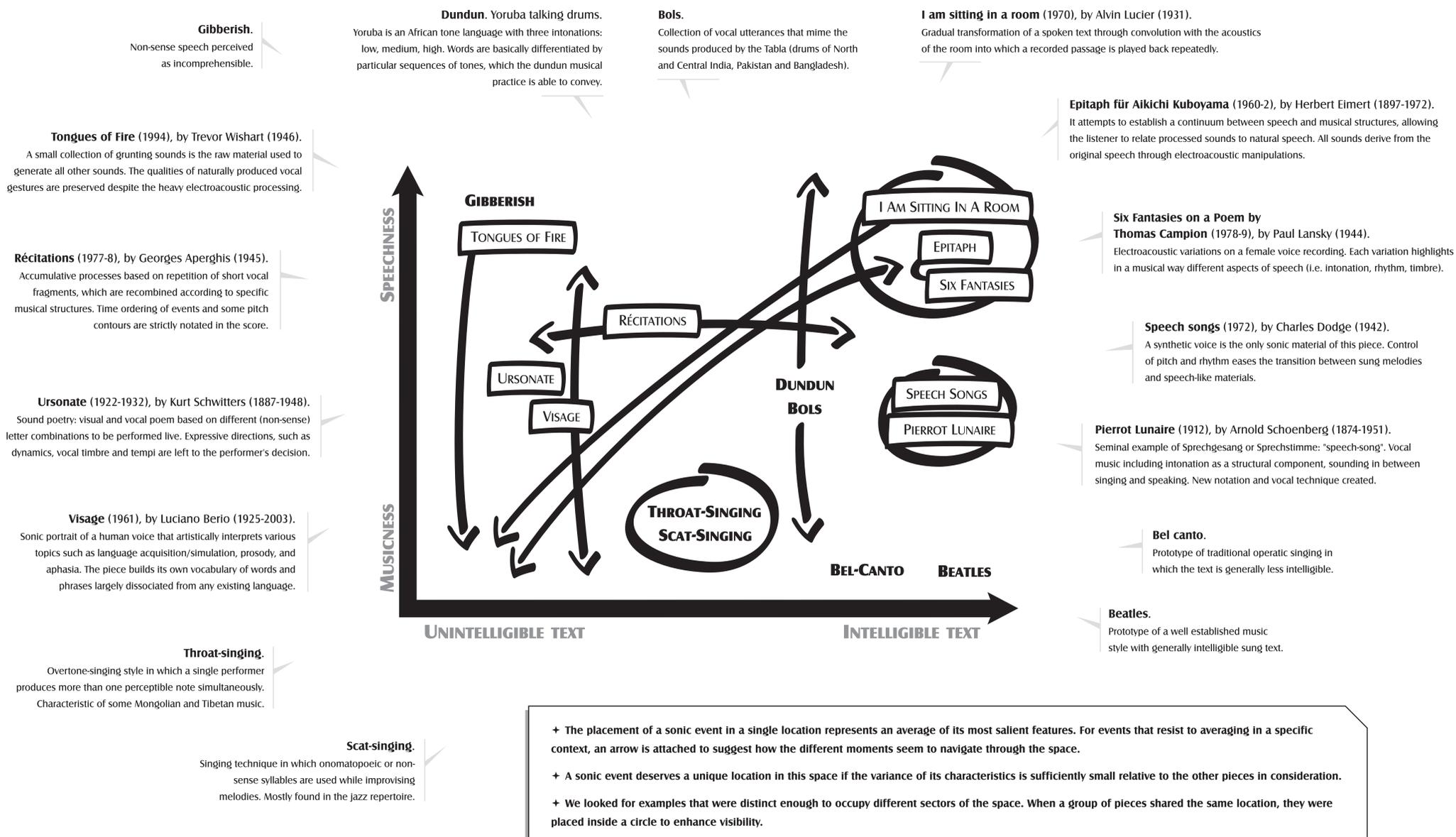
+ A blurred distinction between music and language acts as the driving force in many 20th Century compositions. Examples from other traditions provide similar insight about the boundaries between music and speech.

+ There are, according to our particular selection of pieces, uncharted territories and spatial movements that suggest opportunities for original aesthetic exploration based on the dichotomy of music and speech.

+ The selected repertoire does not exhaust the possibilities posed by our model. Other important pieces that may be included in future explorations are, for example: *Symphonie pour un Homme Seul* (1950), by Pierre Schaeffer & Pierre Henry; *Gesang der Jünglinge* (1955-6), by Karlheinz Stockhausen; *Aventures & Nouvelles Aventures* (1962-1966), by György Ligeti; *A-ronne* (1974), by Luciano Berio; *On Speaking Terms* (1986), by Lars-Gunnar Bodin; and *Direct Sound: Five Voices* (1989), by David Moss.

+ The multiple possibilities of blurring the boundaries between music and language, as demonstrated by the selected pieces, may provide new and useful insights for our understanding of the nature of perception in both domains.

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