A Philosophical Wish List for Research in Music Information Retrieval

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Abstract

Within a framework provided by the traditional trio consisting of metaphysics, epistemology and ethics, a first stab is made at a wish list for MIR-research from a philosophical point of view. Since the tools of MIR are equipped to study language and its use from a purely sonic standpoint, MIR research could result in another revealing revolution within the linguistic turn in philosophy.

Keywords: Philosophy and MIR, language as spoken, memory

1. Introduction and Brief Setting of the Stage

Philosophy wrestles with questions regarding *metaphysics*, *epistemology* and *ethics*.

Metaphysics can usefully be characterized as that field which grapples with the question: What is the ultimate substrate of the universe, that which is most aptly regarded as basic? A related question is: What *is* there in the universe for which our chosen metaphysics is the substrate? This area of inquiry may be labeled as the rightful domain of *ontology.*

Epistemology may be briefly characterized as the area within philosophy which struggles with the query: What criteria do we have for knowing rather than simply believing that something is the case?

Ethics seeks insight into the how we should answer the question: How ought we to behave/what is right?

The foregoing questions are daunting ones and the way one might go about trying to answer them is far from obvious. The previous century has many times been celebrated as that in which philosophy took a "linguistic turn." A candidate for a brutal formulation of the attitudes and convictions reflected by "the linguistic turn" is this: It is difficult, if not impossible, to imagine having proper access to the kind of high-level of abstraction required for dealing with basic, philosophical questions without language as the shaper of this conceptual realm, indeed as that which gives us the only means at our disposal for defining what it is we believe this realm to consist of. By trying to gain insight into the way language mediates our understanding, we are afforded methods for dealing with

what might otherwise seem utterly intractable questions.

What insights could MIR-research provide into the great questions of philosophy? The answer lies in the particular facility which the tools of MIR possess for dealing with language as a sonic phenomenon, thus providing yet another revolution in the linguistic turn. [1] A search through the reams of literature produced regarding the role of language in philosophical endeavor reveals that the language framework is virtually always a written one. Little or no attention has been paid to the mechanisms at work in thinking, learning and communicating in a context which is virtually of an exclusively oral, sonic. [2] Since the overwhelming majority of time during which our thinking, learning and communicative skills developed was characterized by speech activity which was unsupported by writing, it is of great relevance to our understanding of ourselves as linguistic agents – and thus thinking agents – to understand what sort of influence this has had on the development of our brains, our strategies for memorizing and what semantic contributions tonal aspects of language may supply. [3]

2. First Stab at a Wish List

(1) First on the list is a wish for more study of the ways in which meaning is evoked, borne and created in language thanks to sonic characteristics. [4] The study of

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[1] As a philosopher, it has been a privilege for me to gain some familiarity with these tools at ISMIR 2004, ISMIR 2005, CMMR 2004 and CMMR 2005, as well as through NTMSB and *JMM*. See [1], [2], [3] and [4].

[2] Writers interested in the evolution of speech and music are one interesting exception. See, for example [5] and [6].

[3] An anonymous reviewer suggested integrating some discussion of Bayesian statistical modeling as well as some references to automatic speech recognition and computational linguistics here in order to "allow MIR practitioners to more easily understand the role they could play in contributing to interdisciplinary work." Although this is an excellent suggestion, space limitations preclude implementing it here.

[4] It could be relevant to study to what extent stroke patients whose native languages are of the markedly melodic, tonal sort recover spontaneously (viz., make unaided progress in the first six months or so) after a stroke. Work by Gottfried Schlaug [7] and collaborators at the Dept. of Neurology, Music and Neuroimaging Laboratory, Beth Israel Deaconess Medical Center and Harvard Medical School, indicates that melodic intonation therapy is a highly effective method for helping

adult illiterate subjects is very important in this respect, since all of their usage of speech is predicated upon remembering small bits of sonic material and rules of composition for these. More work is needed on the ways in which the comprehension of segmentation of speech and of prosody in speech is or is not related to the way in which we experience interference in the comprehension of musical gestalts when performance is slowed down, time intervals between parts of a melody are lengthened or shortened, etc. ([8], [9] and [10]). It would be of immense interest to find out how illiterate agents living in a basically reading/writing free context (if such a context can, indeed, still be found) compare with illiterate agents embedded in a literate milieu. In such a context, that which must be remembered – if any appreciable detail is involved – requires that at least one member of the group actively and intentionally can retrieve information from his or her own intentionally stored memories (we are regarding situations such as the reactivation of hypnotically conditioned agents á la *The Manchurian Candidate* [11] to be sufficiently pathological so as not to require inclusion in the analysis at hand). MIR researchers asking the right sort of questions could begin to examine the relations holding among the following: What mnemonic roles are played by the tonal features of language? To what extent are musical preferences a function of memorability? What is the relationship between knowledge, belief – and memory? In order for an agent to have any grasp of what sort of recallable things and/or processes there are at all – and thus commit to at least some sort of ontology – memory is indispensable.

(2) Since memory on both a group and individual level is also crucial for the sustenance of culture, the relationships between these two sorts of memory are important. The tools of MIR increasingly exhibit unprecedented ability to analyze huge databases of sonic data *at different scales,* viz. on individual and on statistically determined levels. As the contents of accessible databases becomes more varied and ever more widely available, it should be possible to obtain quantifiable evidence with regard to what the characteristics of music regarded as memorable within the framework of an entire culture might be. Such insights into ways in which culturally robust sonic artifacts are constructed and maintained are philosophically relevant from the perspective of "practical ontology."

(3) Since the description of musical pieces in terms of emotional content is widely employed by listeners, research that can show correlations between brain states and at least certain emotional ones in a wide variety of listeners listening to the same musical selections could help to cut across discussions of cultural relativity and

emotion and provide indices which are reliable on a global, multicultural scale.[5]

(4) This brings us, finally, to the questions of ethics. As more and more music becomes digitally available and associated with various moods, emotional states, and the like due to various phenomenological properties, to what degree should users be sensitive to impropriety, such as, say, using musical material from one culture's repertoire of sacred music as dance and party music within the context of another culture?

References

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[2] C.M. Grund. "Interdisciplinarity and Computer Music Modeling and Information Retrieval: When Will the Humanities Get into the Act?" in *Computer Music Modeling and Retrieval* Third International Symposium, CMMR 2005, Pisa, Italy, September 2005, Revised Papers, Springer Verlag, 2006, pp. 265-273.

[3] NTSMB, www.ntmsb.dk. See programs for *Nature, Culture and Musical Meaning* and *Music, Logic and Technology.*

[4] *JMM: The Journal of Music and Meaning,* www.musicandmeaning.net

[5] Christensen-Dalsgaard, Jakob. "Music and the Origin of Speeches." *JMM 2*, www.musicandmeaning.net, section 2.

[6] Iegor Reznikoff, "On Primitive Elements of Musical Meaning", *JMM 2*, www.musicandmeaning.net, section 2.

[7] "Using Music and Musicians to Explore Brain Plasticity," talk given by Gottfried Schlaug at the conference *Music in the Brain – Experience and Learning* held April 21-22, 2006 at the Royal Academy of Music, Århus, Denmark (hereafter referred to as *MIB*).

[8] Cyrille Magne, Mitsuko Aramaki, Corine Astesano, Reyna Leigh Gordon, Sølvi Ystad, Snorre Farner, Richard Kronland-Martinet & Mireille Besson, "Comparison of Rhythmic Processing in Language and Music: An Interdisciplinary Approach" *JMM 3* www.musicandmeaning.net, section 5.

[9] "The Nature of Music from a Biological Perspective," talk given by Isabelle Peretz at *MIB* (see [7]).

[10] "Influence of Music training on Language Processing: Electrophysical Studies in Both Adults and Children," talk given by Mireille Besson at *MIB* (see [7]).

[11] *The Manchurian Candidate,* dir. John Frankenheimer, screenplay by George Axelrod, based upon a novel by Richard Condon. MGM 1962. MGM DVD 2004.

[12] "Emotions in Music Listening are Mainly Learned," talk given by Eckart Altenmüller at *MIB* (see [7]).

[13] "Emotions in Music are Partly Innate," talk given by Karen Johanne Pallesen at *MIB* (see [7]).

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patients with aphasia after strokes to regain their ability to speak.

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[5] Their seemingly contradictory titles notwithstanding, [12] and [13] contained findings which pointed in this direction.