Isaac Schankler
1/25/2010
ISE575/EE675
Prof. Elaine Chew

Synopsis: "Comparing the rhythm and melody of speech and music: The case of British English and French" by A. Patel, J. Iversen and J. Rosenberg

This paper purports to find a connection between French and English prosody and music through analysis of their respective qualities of rhythmic profile and pitch contour. According to the researchers, French music is reflective of prosodic features of the French language, and likewise English music reflects features of the English language. The authors propose and execute novel methods to support this theory, including a measure of temporal patterning called nPVI (normalized pairwise variability index), and the prosogram, a newly developed computational model of speech intonation perception.

The nPVI method is distinct from methods that simply measure durational variability, in that the nPVI is dependent on the order of events. That is, in short, the nPVI works by comparing a given duration to the previous duration in sequence. This makes the nVPI a more specific and informative measure than variability for purposes of this article – in other words, nVPI measures "contrastiveness."

The prosogram, by contrast, takes a raw contour of a vocal sample, segregates it into syllabic units, and filters through only pitch movement above certain thresholds which are thought to correspond to the limits of human speech perception. The bottleneck here is that the syllabic divisions must be done manually by people; so far, there is no fast and accurate way to automatically draw syllable boundaries.

Using these two measures to quantify human speech, the authors compare vocal samples to written examples of musical themes by French and English composers of the 19th century. The substantial difference between spoken prosody and written music is not lost on the authors, but they argue that using recordings of music would raise more problems of accounting for individual interpretation and, for example, having to determine the "authenticity" of a particular interpretation. (What about an English piece played by a French performer, or vice versa?) While I buy their argument to an extent, I do think they severely oversell their point when they assert that musical notation is an "unambiguous record of the composer's intentions" (p. 3038). (Ha!) They do note that future work should take performance tendencies into account, and I agree.

That said, the paper's findings are still fairly convincing. According to the results comparing nPVI of French and English music and speech, both English music and speech showed greater contrastiveness. Interestingly, French and English music were more similar to each other than French and English speech, which sat at the extremes. This may suggest that there is a shared musical language, or (more likely) that French and English music influenced one another. The article also notes some exceptions in their schema, like the fact that Gustav Holst, an archetypically British composer, was located in "French" space according to the results. This suggested to the authors that either their sample size of themes was too small, or that perhaps a mysterious third measure is called for in order to properly model Holst's Britishness. (Two possibilities they do not state: that their premise may be faulty, or that Holst may be secretly French.)

Isaac Schankler
1/25/2010
ISE575/EE675
Prof. Elaine Chew

Synopsis: "Musical rhythm, linguistic rhythm, and human evolution" by A. Patel

This is a largely speculative article about the possibility that humans' ability to perform and discern musical rhythms has been shaped by evolution. Patel begins by exploring the possibility that musical rhythm originates from linguistic rhythm (which has been shown to be ingrained to some extent), and while they share similar qualities in terms of grouping and contour, speech does not have a regular beat as most music does. Therefore, beat perception and synchronization (BPS) must come from somewhere else. The rest of the article concerns itself with questions of musical rhythm's innateness, domain specificity, and human specificity. Since there seems to be almost no information about the former two, the article is largely focused on human specificity.

Patel begins this discussion by asserting that "animals do not naturally produce music," a statement I find problematic. Most people, I think, would at least concede that birds produce music. (The composer Olivier Messiaen was a tireless cataloguer of birdsong, and much of his music was based on the rhythms and contours of birdsong drastically slowed down to fit a more "human" rate of perception.) One might argue that because they do not produce music with conscious intent, it cannot be considered "music" per se, but this generates a Catch-22 style of circular logic – any animal that produces music "naturally" could then not be considered a true producer of "conscious" music! And we have also seen from the video shown in class that birds can dance as well, demonstrating beat perception and synchronicity.

Even if we do concede that animals do not naturally make (what we define as) music, I am not certain that we naturally make (what we define as) music. We may be able to determine that the ability to discern a regular beat is influenced by evolution, but I sincerely doubt evolution will ever be able to account for the complex strata of structure and nuance in our culture's music – things like counterpoint, functional harmony, etc.