

Reading Spectrograms

Temptation to daring interpretations

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Today, a large selection of software displaying a recorded voice in superimposed images with different widths, numbers of lines, colours and well-defined lines is available in many forms such as apps, free downloads and paid software.

This kind of representation is called spectrogram and is one display form among the diverse visualization programs that have been presented in Helsinki.

The spectrogram shows the conversion of the intensity of the energy of an acoustic pulse into a visual representation in the different frequency ranges of the harmonics of a generated sound or melody. Horizontally stacked they are recognizable as the acoustic phenomena of the overtone or harmonic series above a fundamental.

A visual representation of an acoustic signal suggests to provide an objective standard that can be used to read the quality of certain parameters of a voice clearly. Therefore the visual profile of the spectrum of an ideal vocal sound appears to offer an objective and measurable image. It follows that this could be the basis for comparison.

A voice or type of vocalization can, in fact, be seen in the spectrogram in its individual and therefore characteristic appearance. This easily leads to daring interpretations. It is possible to come to conclusions if one remembers that intensive colors show only the amount of energy that was produced. But they say nothing about how it was produced or formed. What can be seen is whether the formants appear in certain areas, or they could be an example for a typical match to good vowel formation. However, only the trained ear of the listener can decide of this is a sign of a "beautiful", "good" or "healthy" phonation. Thus vocal qualities remain objective to subjective criteria.

The changes in the colours of the lines in one pitch suggest that something is happening in the voice at that point, but they are only the result of the calculations and do not actually show specific events. Another type of representation uses shades of only one color. This gives a better and more realistic picture, but is hampered by more difficult visual discrimination for the observer.

Conclusion: The spectrogram provides the visual support for explanation and individual training of various parameters of a vocalization. It is an innovative tool, that belongs in the hands of vocal experts.

382 words
2337 characters

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