**Comparing the Voice Visualization Software Programmes –**

***Sing and See, Sygyt, Voce Vista,***

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This is not a comprehensive comparison of the programmes available, indeed in Helsinki people came with a variety of Real Time Visual Feedback which I have not been able to explore here. This is a report based on a brief presentation of my personal use of the programmes and the discoveries I made while exploring them with colleagues in Helsinki.

My understanding is that the original voice analysis programmes were built for the use of speech scientists and voice therapists. Since then *Gram* and *Voce Vista* have been reworked in response to the needs of the vocal singing profession who came to see the impact this kind of visual feedback could have on the teaching of singing way back in 1996. *Sing and See* from Australia and *Sygyt* from Germany have used this experience to produce two programmes that claim to be more refined for the singer and teacher to use. These are tools for enabling the singer and teacher to focus on particular technical skills and each programme will have its advocates. Some prefer the simplicity, if you can call it that, of a spectrum, others a spectrograph, others the keyboard and tuning line or the highlighting of specific harmonic clusters. There are also other programmes available, some are free to download initially and the costs vary.

It is always important to be clear about what we can see, and how it relates to what we hear. We also need to be focussed on specific tasks once the programme is being used in our studios. Although the emphasis is on visual feedback the style of images may suit different needs, a dyslexic singer found the *Sygyt* programme easier to use.

I tend to use the tuning and keyboard option on *Sing and See* if I am dealing with tuning matters but keep to the spectrographic image for matters of articulation and vowel colours. I don't use the playback feature very often because my little laptop and soundcard would not give an accurate aural message. I do try to keep the placing of the machine at the same distance and if I demonstrate maintain the same place as the student. I always explain that this technology is limited by the quality of my machine. However the visual feedback is usually clear enough for the simple tasks I set the student. I could use a special headset microphone but to be honest the more things I have to carry around as I teach the less I am likely to use them. If you have a permanent teaching studio by all means invest in more sophisticated equipment.

The scientists prefer the black and white image of the spectrogram because the colours are not relevant and can be confusing but I have found my students prefer the colours because it looks more exciting and as I am not using it for sophisticated diagnostic purposes I use the coloured feedback. I believe that over the next few years we will see more programmes developing that respond to the needs of the teaching studio rather than the science laboratory.

The spectrographic software programmes are very similar in what they show, but *Sygyt* offers a comprehensive overtone analysis alongside the spectrogram which can be useful. I only used the free download to experiment with but it seems to have a lot of potential.

It is very easy to be confused by the visual 'metaphors' on screen and the only way is to get used to the particular system you choose and become familiar with the various options. You can easily change the visual displays if you go into Edit or View. I think it is important to keep trying

the same phrase in a variety of ways to note the differences on screen. It is tempting to make funny noises but I found the most productive way forward was keeping to the same series of vowels and consonants and singing a phrase of an unaccompanied song.

I am including some quotes from the websites of the software programmes so that it is clear what each is trying to do.

***Voce Vista***

"We build products for analyzing vocal signals that can be used in a variety of ways. Although developed primarily to provide objective tools for singing teachers to help their students improve, our products are used by voice pathologists and other fields.

Our primary product is VoceVista ("visible voice") a unique hardware/software package which incorporates the two electronic signals most revealing of the singing voice (real-time spectrum analysis and electroglottograph) into an integrated, user-friendly package for PCs and Apple computers running Windows. Simple to operate, it is non-invasive and intended for use by those whose expertise concerns the singing voice, rather than signal processing. VoceVista displays the signals in combinations of three basic formats: spectrogram, power spectrum, and high time-resolution waveforms."

"VoceVista" is an outgrowth of a quest to get past the subjectivity that limits all descriptions of voice and to arrive at its factual, objective features. In the second half of the 20th century, spectrum analysis allowed us to peer into the patterns of frequency components that determine voice quality and the various vowels. By the mid-nineties affordable personal computers had developed to the point where they could display spectrum analysis in real time. At the Groningen Voice Research Lab Harm K. Schutte and Donald G. Miller, who were pursuing research on the singing voice in the wake of Janwillem van den Berg and William Vennard, decided to integrate the two most important non-invasive signals for the singing voice -- from a microphone and an electroglottograph -- in a computer program that would analyze and display them. With the assistance of James Doing, who figured prominently in the initial development of the program, VoceVista made its public debut at the national conference of National Association of Teachers of Singers (NATS) in St. Louis (USA) on the last day of 1996."

***Sygyt***

Overtone Analyzer is a software application for recording and exploring **sound**, especially the sound of the **voice** and of **musical instruments**. It helps to visualize, measure and understand three main aspects of your sound:

**Pitch**

- What pitch am I singing or playing?
- Is my instrument in tune?
- How is my vibrato?

**Timbre**

- How strong are the different harmonics / overtones?
- How is my resonance?
- What are the relations between the physiology of the voice, the physics of sound, and the theory of music?

**Change**

- How does my sound change over time?
- How does my voice develop, and what progress have I made?
- How do different recordings look and sound in comparison?

***Sing & See***

"Sing & See is the singing training software that teachers and singers all over the world are now using to improve their vocal training experience. It shows the singer and teacher visual displays that represent the voice - pitch, loudness, and timbre. This direct visual feedback enhances the spoken feedback that teachers give their students, and allows singers to see patterns in their voices that they might otherwise miss out on hearing.

See how the Sing & See display shows you not only whether the singer is hitting each note exactly, but **how** the voice makes the transition between notes. You can immediately see if there is overshooting or scooping, clear vibrato, roughness, etc. Conversely, the singing software can also provide students with positive reinforcement that they **are** achieving a clean vocal line.

As well as showing you a line of the exact pitch the voice traces over time, Sing & See helps to visualise singing in a musical context. It highlights each note sung on a *virtual* piano keyboard at the top of the screen, and also on a musical staff displayed on the left side. So students get an immediate visual understanding of how each pitch in their vocal range relates to music both as it is written and as it is played on the keyboard.

Sing & See vocal training software also includes real-time spectrographic analysis, which provides in-depth information on the harmonic structure of the voice, allowing you to explore questions such as vowel consistency, vocal timbre, and upper harmonic strength."

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