

EUROPEAN VOCAL PEDAGOGY – DIGITAL RESOURCES TECHNOLOGY

sponsored by the Leonardo da Vinci Lifelong Learning Programme

VOICE SYNTHESIS IN THE TEACHING STUDIO: USING *MADDE* TO DEMONSTRATE VOCAL SOUND

Technology is now in a position to offer us yet again, new approaches and new ways of describing vocal sound. *Madde* is a software programme designed for demonstration purposes. It was during just such a demonstration in a conference presentation, long before I thought of using a computer in teaching, that I understood what was meant by the singer's formant or formant cluster. Why did it take so long for me to come to the very logical conclusion, that my students might also profit from such a demonstration?

Traditional methods of teaching are based on the use of metaphors and images. One of the basic problems of methods based on metaphors and information, however, is that teacher and student do not work on the basis of identical information. The last generation of teachers has seen the addition of a large resource of knowledge given by voice research, which has served to objectify many aspects of vocal technique.

As teachers of singing, we work from an inner idea of how we think a student's voice could and should sound. Our students come to their lessons with their own idea of the vocal sound they identify with, the sounds they have learned to make or the sound they think they could make. Some students, particularly amateurs and young students, have little or no idea of their vocal potential. Consequently, we have the difficulty of bridging the gap between the two sets of subjective ideas. What means do we have to do this? One common methodology involves modelling and imitation, but that too is subjective. Explaining an idea of sound can be a difficult task, even more difficult when dealing with language and cultural barriers. My experience confirmed, that an aural demonstration can offer a wonderful short-cut in this communication process.

Case study: Tenor - upper register

Student A, a tenor was nearing the end of his studies. Despite good work and technical progress, he still hung on to his habitual spreading, unfocussed tone when he transitioned into the upper range, losing carrying power and brilliance. No amount of explanation or imaging seemed to bring the desired result. Suspecting, that his inner ear might not have an idea of the missing brilliance in his sound, or that he couldn't imagine his voice sounding different in the upper range, I decided to try *Madde*. Since I was not at all sure how to proceed, or if it would be helpful, I arranged a time with him at the end of my teaching day, so we could experiment without time pressure or distraction.

We began by listening to the preset sound on c/C⁴. Then I clicked the formants F¹ – F⁶ off, reducing the components of the sound to the "laryngeal buzz" of the fundamental. This clear demonstration of the parameters of sound interested him, so we clicked back and forth, listening particularly to the consecutive build-up of the formants. After a few minutes, we continued the same exercise, moving upward by semitones into the pitches of his upper range. Hearing how the sounds should be composed didn't solve the technical problem, but it opened the door to a new concept of potential sounds.

We followed through in three ways:

- he downloaded the programme and continued listening and experimenting in his practising.
- in his lessons, we concentrated making sure he was using the right means to produce the new sounds. This did not involve new material, but since his understanding of the goal had developed a new dimension, it did mean much more effective communication as to where we were headed and how to get there.
- the third step involved setting up a "voice portrait" by transferring a spectrum analysis of his voice taken from RTSect (also free software from KTH) and Analyzer Pro (iPhone App) to *Madde* instead of using the pre-set formants. Despite the fact that my efforts at interpreting his vocal spectrum could not have been precise, he could identify with the resulting sound as resembling his voice. We repeated the initial exercise on the basis of this sound.

Working with *Madde* initiated a break-through in his vocal development. These exercises didn't give him the technical information he needed in order to solve the problem, but it did make it possible for him to define his own metaphors for the sensations he perceived and therefore to find the new, focussed sound on his own and establish it in his singing.

Case Study: Soprano middle register

An advanced student, a lyric soprano was cast in a role with a high tessitura in the university opera production. After the production was over, we found that her voice had gained considerably in strength and a couple of notes in her top range. Consequently, there was also a new development in the low register around and below c^1/C^4 . However, the register blending in the middle range no longer functioned. The voice essentially fell apart in the middle. This was quite unsettling, since we had worked long and hard to blend her registers prior to the production. She had a set of technical exercises, which we had used to develop the muscular strength and control that had been lacking and began to repeat them in her lessons. However, it was different this time. When we dealt with the problem the first time, the primary goal was to build muscular strength and establish control. This time, she was fine in the technical exercises, but lost control in the repertoire, especially in coloratura passages in the middle range, $C^1 - c^2/C^4 - C^5$. I was sure that the problem was not essentially a question of muscular strength.

Having had the successful experience with the tenor, I decided to try something similar with the soprano. This time, I opened the computer during her lesson, and used *Madde* with the presets to show her the composition of the sound in the range that was creating the problems. This time I clicked off all the formants before starting the sound, so we began by hearing the consecutive build-up of the "layers", rather than subtracting formants as I had done with the tenor. I knew her as a good imitator, so on the second or third round, I asked if she could imitate the different sounds she heard as the formants were added, one by one. Her voice followed her ear without any difficulty and within roughly 15 minutes, the problem was essentially solved as we extended the exercise over the entire octave. Her ear had been tuned to hear the overtones in her own voice in a new way.

The follow through once again involved some practise with *Madde* on her own and the technical check, to make sure she was using the right means of producing the vocal colours of the middle range.

Conclusion

The technology offered the possibility to demonstrate this in a way that was easy for the students to understand intuitively, without any explanation other than that we were listening to the different partials of the sound and a short reference to a vibrating string.

In both cases, the possibility of demonstrating the composition of the sound and the effects of formants on carrying power helped tune the student's ear to the sound I wanted to hear them produce.

Prof. Norma Enns
 enns@evta-online.org