Some Thoughts About Aural Skills Training

- **If there is an effective way to teach these skills without stress, doesn't it make sense to give it a try?**

Dear Colleagues,

I want to address specifically the Aural Skills methodologies around pitch, particularly with regard to composition students.

I am running into students who are avoiding taking aural skills, or who are very traumatized when they are in the class, and having to deal with that.

I am worried about some promising, talented students dropping out of school.

Given: Aural Skills - (specifically, that portion of aural skills that deals with the ability to think precisely about the relationships of musical pitches), is a critical core skill for professional musicians. I take this as true and consider aural skills training to be essential.

Problem: The way that aural skills has been historically taught is largely ineffective and in principle (though unintentionally) bullying. With the exception of the few people that have absolute pitch (AP), most students experience the traditional aural skills methodology as extremely stressful. In the best cases, students feel like they have "gotten through something". Other students endure mental anguish that impacts their other studies and their mental health. No matter how hard they try they don't get much better, and afterwards they never want anything to do with the drills they endured. They end up feeling humiliated, that they are stupid, untalented, and their GPA has been lowered. For many students these are the outcomes of traditional aural skills training.

As a music student, struggling with all of the above issues, it occurred to me to look into whether or not there might be a more effective way to acquire these skills. Under the guidance of world absolute pitch expert W Dixon Ward, who held chairs in otolaryngology and psychology, I undertook to replicate and extend the research studies of Paul T. Brady, a researcher at Bell Labs who developed a methodology for absolute pitch (AP) acquisition in the 1970s. (as a prelude to this, I completed a 150 year study of the literature on absolute pitch.). Under Ward's mentorship, I conducted a research study with participants. He wanted me to publish the study, but I ended up headed to Yale, immersed in getting through the composition program as a single parent.

However, when I taught at Lewis and Clark college in Portland during the 1990s, I was able to implement my methodology with the music students. I extended and honed Brady's core procedure and developed an aural skills program based on it. In some students it does lead to AP, but for all students it provides a robust, accessible basis for creating skill building tools that work.

There are several **core principles** upon which the methodology is based:

- For most people, aural skills must be practiced on a daily basis. Like a physical work out routine, one's ability to think precisely about pitch must be practiced continuously. it is a "use it or lose it" dynamic in our neurophysiology. (For a very few people, who usually come from professional musical families where they are presented with the names of pitches within a critical developmental window that starts to close at around three years of age, the ability to recognize and name pitches is concrete. We call this absolute pitch (AP).)
- An effective methodology therefore, would introduce students to an aural skills workout routine that they can implement every day, like brushing their teeth, for the rest of their life, way beyond their graduation day.
- Aural skills are highly personal, and private. Just as traditional definitions of intelligence have broadened to recognize that there are many styles and patterns of cognition, that are not measured in so-called IQ tests, so it is not useful or appropriate to compare students abilities in aural skills. There are many ways to hear music.
- The important thing is that students continue to work on improving their abilities, not on how well they compare with someone else in the class.
- Aural skills should be addressed as an important life skill, like meditation, and like meditation, it is not useful to the student to compare individuals and rank them. It is absurd and beside the point.
- Aural skills should be taught on a pass-fail basis, and that should be based on consistent attendance.
- What a student does with their training after leaving school is beyond our control, but the emphasis of the class should be that the student is learning a set of daily routines that they can take along on their post school journey, that are convenient, flexible and accessible. That they can build on by themself based on underlying principles. They should be pointed in the right direction and be encouraged to find their own methodologies.
- There is no precise correlation between one's creative imagination in composing music and one's ability to name pitches precisely. However, anecdotally, being able to accurately represent an internal melodic landscape gives one's unconscious the ability to imagine supple and natural melodic forms.
- There is no correlation between one's ability to name pitches precisely and one's ability to enjoy music. There is much that is not understood about how we cognitively respond to the aural patterns that we call music.

DESIRED OUTCOMES: Students learn an effective, accessible, habitual routine for practicing melody creation and recognition, that they take into their professional lives post-college.

Three cognitive mechanisms are at work in listening to melody-based music: (Professional musicians need a methodology that practices all 3 simultaneously)

1. **Note to Note** (tracking the interval, the distance between successive notes),
2. **Note to Key** (tracking the relationship of the current note within the hierarchical system of the note which dominates a musical "key". For example C major, or D minor),
3. **Remembering an earlier occurrence** of the same note, that sounded 1-3 notes earlier in the sequence.

The traditional approach of working with a collection of melodies trains students in the first 3 cognitive mechanisms, but requires students to have access to a collection of melodies, which is unlikely to happen in any rigorous way once they are no longer in the class.

The proposed alternative training methodology, using random notes and auralizing an anchor tone, generalizes the 3 steps, can be accessed conveniently on a cellphone via a variety of commonly available Apps, (as well as manually with a tuning fork) and adds a 4th skil, of great value to composers: **Composers need a methodology that also involves identifying and producing sequences of notes in continuously new configurations.**

How to evaluate student progress:

- Students are initially evaluated on their ability to correctly identify pitch classes using the the training App. (they are given 100 presentations, at 2 second interval, 12 pitch classes, in a 3 octave spread)
- Based on performance, students create a self-paced regimen, based on 300 correct responses per day.
- Students fill out a daily log (google spread sheet) of their practice, which is shared and monitored by instructor.
    - Log contains:
        - Time spent on studies
        - number of pitch class presentations attempted
        - % correct responses
        - Pitch classes student is working with (C, C#, D, D#, E, F, F# etc.)
        - Time interval between pitch class presentations

    - Number of octaves from which pitch classes are drawn

Methodology:

- An analogy: You are floating in outer space with no stars, complete blackness, no points of orientation. You can turn around. Suddenly you are surrounded by a circle of 12 identical white lights. You are asked to keep track of the location and identity of individual lights. This is difficult, but possible if you don't move at all, but if you turn around at all, it is almost impossible not to lose track of which light is which since they are all identical. You can see the relationships between lights, some are one light apart some are six lights apart etc. but remembering the specific lights is next to impossible. This is how most people hear music. They are aware of the relative relationships of notes but not any sort of absolute relationships.
- Now however turn one of the lights green. Suddenly, this light becomes an anchor point and because of its unique relationship with every other light of the 12, suddenly all 12 can be identified accurately.
- Brady theorized that most possessors of AP were presented with the names of pitches during the critical developmental window when we are very young, when we are most interested in attaching labels to the world, rather than sequences of labels. (Piaget)
- He was imagining a very young child sitting on the knee of a parent at the piano, and learning simple piano music, in the key of C.
- Since the parents are professionals, they are giving the names of those pitches to the child and the child remembers them.
- Brady theorized that one pitch, the most important hierarchically, would most likely be the first to be remembered, and it would then serve as an anchor, by which the other pitches first would be identified by their relative interval, and eventually would develop their own identity.
- He created a learning methodology which attempted to duplicate this.
- To create an anchor, he taught himself to auralize the note C. "Auralize" means to be able to generate a pitch internally, the aural counterpart of visualize.
- Using this internally maintained, auralized C, he presented himself with a randomly generated set of pitches that he identified by comparing them to his internal C.
- At first there are only two pitches: C & G. And C is heavily weighted.
- The time in between pitch presentations is five seconds
- As one becomes skilled at auralizing C and accurate at naming the presented pitch, the number of pitches is increased, and the weight of C is decreased until all 12 pitches are being presented at intervals of 1.4 seconds, across three octaves, equally weighted.
- There are many ways to generalize implementation of these procedures. Currently I use an iPhone App called "Pitch"... There are equivalent Apps for Android.
- At Lewis & Clark I developed a set of exercises around this procedure:
    - Students sang, then auralized C while listening to pop tunes in various keys, eventually becoming able to recognize the key.

    - I created a simple singable arpeggiated meta-diatonic I, IV, V pattern interpolating C into all 12 keys, for students to practice, extending a common practice tonal version of Brady's non-contextual random procedure.
    - On Fridays students met at the gym, suited up, and practiced auralizing these patterns while jogging around the track w tuning fork C reference (I figured most students needed exercise, and again, wanted to encourage them to find ways to incorporate aural skills into their life routines after school.)
- In my extensive experience, the cell phone-based App provides an easy, practical and effective way to practice aural skills.

I offer the above merely as suggestions based on my own experience.

- The takeaways:
    - The focus of Aural Skills training should be to cultivate the valuing of Aural Skills as a critical life skill for professional musicians;
    - Aural Skills training is a "use it or lose it" ability, like working out physically, and like working out, must be practiced daily;
    - Aural Skills ability is highly personal, like Meditation, and pedagogical methodologies that are based on comparative ranking of students are ineffective and needlessly stressful;
    - Students should be introduced to basic concepts of how this cognitive ability functions, learn ways to "work out", and be encouraged to explore and develop their own routines.
    - How well individuals perform at a given moment is irrelevant, what _IS_ important is that they continuously work on improving their abilities.

Pedagogy should reflect this.

With Warm Regards,
Jozefius

Fixed-Scale Mechanism of Absolute Pitch

The Journal of the Acoustical Society of America **48**, 883 (1970);
https://doi.org/10.1121/1.1912227

Paul T. Brady

Research Reports Suggesting that Absolute Pitch (Perfect Pitch) Ability Can Be Learned

Summary of a research report by Paul T. Brady that suggests that absolute pitch ability can be learned and improved through practice (note that "perfect pitch" is usually called by researchers "absolute pitch"):

Paul T. Brady

"With intensive training, the author, who had no previous ability in identification of randomly presented tones form the 12-tone musical scale, achieved a performance level of 65% exactly correct and 97% correct within +/- half-step (semitone). The training task consisted of spending many hours hearing and identifying randomly presented tones with feedback on the judgements. Successful acquisition of absolute-tone identification contributes to the evidence that an adult can learn this task . . . " "The breakthrough occurred in May when I began to apply a version of the technique suggested by Cuddy (1968). It consists of playing sine waves at frequencies randomly selected from the musical scale, at first heavily weighted by C's (C is arbitrary; any note will do), but with the proportion of C's eventually dropping to 1/12. The non-C's were always uniformly distributed. Cuddy required her subjects to identify only the anchor tone, but I tried to identify all tones. . . . At first the tones (1 sec long) occurred about every 5 sec, with high probability of C (0.4). Eventually, they occurred with uniform probability every 1.4 sec."

"Fixed-Scale Mechanism of Absolute Pitch," by Paul T. Brady, in *The Journal of the Acoustical Society of America*, 1970, Vol. 40, 883-887.

Note: this summary leaves are the important, critical detail that in order to be effective, one must be auralizing an anchor pitch.