Selective Hearing – Ear Training in Academia

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When people train, they work to get better at something in order to achieve a goal within a specific system. Within the academic world, listening is taught through means of an ear "training" class. Ear training class does not necessarily mean that students will be listening, but rather students will be training to hear correctly within a system. In these classes across universities, students learn to identify several things within tonal and even non-tonal theoretical contexts. In both contexts, students come to class to learn how to identify pitches in relation to one another. While there are other components to ear training that do not focus on pitch relations, such as rhythmic dictation, the emphasis is put on harmonies and pitches in a relative framework.

The pitch relation system for ear training in academia has developed because most students (and people, for that matter) hear in relative terms. Their knowledge of pitches and sound are based off of other pitches that they hear within that same musical context. In *Musicophilia*, Oliver Sacks quotes Diana Deutsch discussing relative pitch, saying:

> "Take color naming as an analogy. Suppose you showed someone a red object and asked him to name the color. And suppose he answered 'I can recognize the color, and I can discriminate it from other colors, but I just can't name it.' Then you juxtaposed a blue object and named its color, and he responded, 'OK, since the second color is blue, the first one must be red.' … This is precisely how most people name pitches—they evaluate the relationship between the pitch to be named and another pitch whose name they already know."[1]

[1] Oliver W. Sacks, *Musicophilia: Tales of Music and the Brain.* (London: Picador, 2011), 134-135.

For this type of student, and at least to some extent, for all types of students, certain modes of tonal and non-tonal based ear training are necessary and helpful. For example, students should learn how to take what they hear within these systems and put it on paper in order to be able to compose and transcribe. After all, composition and transcription are necessary methods which enable musicians to communicate with one another. Furthermore, discussion of music comes from the ability to take what one hears and put it into words that others will understand.

However, when ear training is only built on theories of pitch relations, it becomes a boxed in method for transcribing, composing, and discussing only pieces that conform to standardized compositional writing techniques. Moreover, ear training becomes boxed in further when it is taught centred only in the tuning system which Robert J. McGarry calls the "unnatural world of equal temperament."[2] E. P. Lennox Atkins refers our standard method of equal temperament to the "systematic method, even at its best, *not* of tuning, but of *mis-tuning*,"[3] which is not an incorrect observation in the slightest. In fact, our very labelling in this system implies the opposite, as "perfect fourths" and "perfect fifths" in equal temperament are not, in fact, perfect. In 1984, McGarry noted that these so-called "perfect" intervals are still "called 'perfect,' even to this day, by many prestigious institutions of higher learning."[4] Atkins goes even further to call equal temperament "the particular form of temperament which spreads the error over all keys and favours none."[5] Atkins' view is

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[2]Robert J. McGarry, "Equal Temperament, Overtones, and the Ear." *Music Educators Journal* 70.7 (1984): 54.
[3]E. P. Lennox Atkins, "Ear-Training and the Standardisation of Equal Temperament." *Proceedings of the Musical Association* 41.1 (1914): 92.
[4] McGarry, "Equal Temperament," 55.
[5] Atkins, "Ear-Training," 94.

strong, but nonetheless, if ear training is centred on pitch only within an equal temperament system, students may be closed off to listening to, composing in, and discussing methods and styles of music outside those of which the curriculum endorses.

Furthermore, certain students, such as "perfect pitch" students, who listen very differently, are not challenged in this method, and tend to typically pass their ear training colours with flying colors. Because they succeed in the given system, these students are often allowed to coast. However, these students are not actually succeeding—their letter grades are an inaccurate reflection of how they hear and how they have been learning. They will tend to be, in my opinion, indefinitely the least improved in the class. In this paper, I argue that the perfect pitch student is actually a special needs case. Although an A+ does not typically seem to signify a "special needs" student (or group of students), I think that if one is able to comprehend education beyond a letter grade, and if one is able to recognize the impediments which perfect pitch students encounter when working in a relative based ear training system, the necessity for individualized exercises and attention becomes quite clear.

There are multiple theories as to how perfect pitch students hear. Desmond Sergeant outlines several in his "Experimental Investigation of Perfect Pitch," including the "chroma" theory, which "claims the possibility of an extra sensitivity in the absolute pitch subject to the 'clang' or 'chroma' of a musical note," the theory of "inborn superiority," and the theory that these people have a "particularly refined form of pitch discrimination ability" (for example, they have an inner sense of A440 and everything is relative to that).[6] In other

[6] Desmond Sergeant, "Experimental Investigation of Absolute Pitch." *Journal of Research in Music Education* 17.1 (1969): 138-139.

words, "perfect pitch" students don't hear pitches in relation to one another. These students hear pitches. They often can label the pitches that they hear, without having to hear a reference point (or a reference pitch). This means that their ear "training" doesn't exist. For the standard system, they have "succeeded" already (so to speak), because they can *label* the relations between pitches easily, without actually having to *hear* the relations.

According to Schirmann, in "The Enigma of Perfect Pitch," an article in the Music Educators Journal from 1936, "The pressure of musical training…is all toward relativity. And if a pupil is able, in spite of this, to preserve a considerable power of absolute judgment, it means that he has kept an unusually clear-cut and well-defined apprehension of the tonal system as a whole."[7] I think that these students have only preserved their method of hearing through a "well-defined apprehension of the tonal system" because they had to. I believe that, in ear training classes (and therefore also in encounters with music outside of ear training class), perfect pitch students enter into a sort of "survival mode." They quickly tie what they hear into the theory they know, because they hear differently. If they did not have this method, they would not survive in that class. This method tied to theory has helped them adapt their hearing to a standard.

Because perfect pitch students listen differently and "succeed" in ear training class, they are often still regarded as other and weird, as though they have some other worldly ability. In that same article from 1936, Schirmann references absolute or perfect pitch as often being "featured as a 'stunt.'"[8] It has been decades since this article was written, and perfect pitch is

[7] C. F. Schirrmann, "The Enigma of Perfect Pitch." *Music Educators Journal* 22.4 (1936): 33.
[8] Ibid, 33.

still regarded as a stunt, a lucky trait that some students have just been granted. Or, other regard it as "impressive," and something to be sought after. However, because all tend to be impressed by it, the students with the "ability" have been ignored, in many cases, causing damaging results. For example, several perfect pitch students cannot even hear major versus minor. Sonority can be incredibly difficult for them. These students often do not listen to how pitches, in a sense, move together. Rather, they tend to hear how pitches exist on their own. So rather than hearing a major chord, they hear "F A C" and tie it to the theoretical concepts that they know, and therefore they know that this means "major." This is a different and mainly external process.

Furthermore, "perfect" pitch is hardly "perfect" or absolute. Sergeant notes that, in a study where over 100 musicians attempted to name pitches in a non-relative setting, pitches that were named correctly were invariably "from instruments with which the subject had been in contact, during early childhood, and generally that which chronologically had been learned first."[9] Often times we think that all perfect pitch students can label the pitch or pitches of the knock on the music stand or the crinkle of a package of chips. But there are many differences. One may be able to hear a pitch and label it, but may be unable to recreate the sound of a pitch that someone asks for. One may be able to hear everything on the piano but choral voices seem impossible. One may be violin minded and the piano is impossible. There may be the possibility that if one were to imagine every pitch being played on a specific instrument that one could hear it. Wolfgang Koehler stated, decades ago, that "a change of tone-color puts to confusion most persons who profess some degree of absolute

[9] Sergeant, "Experimental Investigation," 140.

ear. In fact the possession of absolute pitch is very dependent upon pitch-blend, timbre, or clang-tint."[10] Sergeant points this out in his study also, saying that it "throws doubts on the validity of many… experiments since, with few exceptions, they used only piano notes, and therefore measured only absolute piano pitch."[11]

For decades, research has suggested that perfect pitch is less perfect than we seem to think. Yet, we still use the term perfect. It seems as though, just as with "perfect fourths" and "perfect fifths," any time we attach the word "perfect" to anything, we don't question it for centuries. The word perfect is a wonderful excuse to pretend as though these things don't need to be addressed. Composer Robert Schumann discusses youth learning music and composition, saying that "the young mind must often unlearn theory before it can apply it."[12] This is especially so when our own vocabulary lies to the very students we claim to be teaching. The term "perfect pitch" allows us to ignore these students. Who wouldn't want perfect pitch? Perfection is, as we claim, unattainable; yet, it will always be desirable.

Perfect pitch does not make for better listeners. Sergeant points out that "the connection between possession of absolute pitch and level of practical ability is… seen to be incidental."[13] Furthermore, having perfect pitch and being "trained" in a system that is fundamentally not for you can box you in (i.e. "survival mode"), making it difficult to listen in general. Oliver Sacks points out problems that perfect pitch listeners often encounter, such as the "inconsistent tuning of musical instruments" which can be "distressing and even

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[10] Schirmann, "The Enigma of Perfect Pitch," 33.
[11] Sergeant, "Experimental Investigation," 140.
[12] Robert Schumann, On Music and Musicians. (Berkeley: U of California Press, 1983), 39. *Schumann is writing here as Master Raro.
[13] Sergeant, "Experimental Investigation", 137.

disabling;" agitation or disturbance when hearing a piece in the wrong key, issues with transposition, and also inability to hear sonority.[14]

As a personal example, I did not know I had any form of perfect pitch, until I was reading along to a hymn that someone was playing on the piano a few years ago. I heard the tune, and I knew what they were playing was what I was looking at. But I could not read along, because there was something I was unable to comprehend. It was like looking at the script of what someone is speaking right in front of you, and knowing that's what they're saying, but hearing it in a different language. This was extremely disorienting and I thought something was wrong with me at the time. I put the hymnbook down and sat for a moment, and I realized that what the pianist was playing was in D major, while what I was looking at was the same hymn transposed up a semitone. My life since then has been, in cases like these, dependent on an internal active transposition to avoid the disorientation and distress that this causes.

Perfect pitch students struggle and experience this disorientation because for so long, they have been babied. They have been coddled, allowed to coast, and not shown anything new and outside of their comfort zone. Because their listening has been dependent on labeling based on theoretical knowledge, when they encounter something outside of their theoretical knowledge, outside of any knowledge, they experience difficulty. They have not been equipped with the necessary "tools" to listen to anything outside of their own understanding. Meanwhile, education typically seeks to break down the boundaries of students' "knowledge" to open them up to a world that they haven't seen (or heard) before.

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[14] Sacks, *Musicophilia*, 131-132.

With perfect pitch students, education, learning will not happen unless their specific listening style is addressed.

There was a study done on several musicians, outlined in Adrian Houtsma's "What Determines Musical Pitch?" which had subjects listen and dictate what they heard of a series of partials that belonged to a sort of melody of fundamentals.[15] Several subjects would "track fundamentals," meaning that they heard the fundamentals as the melody, rather than the partials themselves. These listeners were deemed synthetic listeners. However, a few subjects actually dictated the partials and did not track fundamentals. These listeners were deemed analytical listeners. The scientists attempted to see if, given certain circumstances, all could become synthetic listeners. So, in the second experiment, every time the audio sounded, the order of partials or even the partials themselves were consistently switched, while still signifying the same fundamentals.

Synthetic listeners, tracking fundamentals, would hear the same melody still, and analytical listeners, listening to partials, would not. The attempt on the part of the scientists was to push analytical brains to find organization and unity by tracking the fundamentals. For the most part, after some difficulty, the analytical listeners tracked the fundamentals. However, "One subject could not perform the task."[16] He or she gave up. This was likely extremely frustrating and distressing for the subject, as someone was telling him or her to dictate the melody, and he or she heard that it was being changed every time.

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[15] Adrian J. M. Houtsma, "What Determines Musical Pitch?" *Journal of Music Theory* 15.1/2 (1971).
[16] Ibid, 144.

In academic ear training, relative listeners, to some extent, are synthetic listeners. They take what they hear and they synthesize the sounds into a unity. Perfect pitch listeners, to some extent, are analytical listeners. They break down unity, and hear smaller parts within the whole. Ear training classes have been attempting to push analytical listeners into a synthetic mode, and this is distressing and frustrating for these listeners. They will struggle, and although some will still be able to find a method to fit into a synthetic system, the way they listen just can't shift to a synthetic mode. Furthermore, several will experience disorientation and distress just as the subject in the study who couldn't finish the dictation question likely did.

Analytical listeners are a minority. The saddest thing about this, is that, while the system coddles its perfect pitch, analytical students, it simultaneously neglects them, and leaves them to fend for their own when they encounter the real musical world—a world increasingly oriented on new experimentation with different tuning, different timbres, and different tonal systems. The students will flounder, and either survive on their own, or drown in a world of chaotic unknown. And they will drown because they have been unable to take the time in their designated ear training class to develop and explore how they hear. And, most of these students wouldn't know at this time that this may be something they need, as they believe they are given what they need within their ear-training class.

Edwin E. Gordon, whose music education theories I will discuss in some detail, says that "Students learn most efficiently when instruction is directed appropriately to their individual levels of aptitude,"[17] and "to paraphrase Plato, there is nothing so unequal as the equal

[17] Edwin Gordon, *The Psychology of Music Teaching*. (Englewood Cliffs, NJ: Prentice-Hall, 1971), 6.

treatment of students of unequal potential."[18] Here and now, it seems strange to talk about students' "aptitude" and "potential." Certainly, such words may be considered outdated by educators. But, Gordon is right in at least one sense: why would we treat students who learn different from one another with the same method of education? Why would we treat students who clearly listen differently from one another with the same method of ear training?

The reason we do it is because commodified knowledge demands a standard and a letter grade. When students pay the university, they expect a grade, and grades display standards, and there is a whole language of standards for ear training in university. Nicholas Cook argues that this is broad across university music programs: theory and analysis "had ended up substituting its own scientific jargon for the personal, living experience of music that had presumably drawn the theorists to it in the first place."[19] Cook argues further, saying that, within ear-training, "students are being inducted into the world of Western musicianship, in which music is made up of 'things' to hear, constructed out of notes in the same sense that houses are constructed out of bricks."[20]

One of the results of this is "that music is transformed from being primarily something you *do* (but do not necessarily know how you do) to something you *know* (but may not necessarily do)."[21] This is, I believe, especially the case for perfect pitch students, as they rely heavily on labels based on the theoretical models that they "know." According to Cook,

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[18] Edwin E. Gordon, "All about Audiation and Music Aptitudes." *Music Educators Journal* 86.2 (1999): 43
[19] Nicholas Cook, "Music and the Academy." *Music: A Very Short Introduction*. (Oxford, UK: Oxford U Press, 2000), 93.
[20] Ibid, 104.
[21] Ibid, 104.

music "is embraced within the structures of the knowledge industry, and of a society which tends to value theory above practice."[22] Edwin Gordon argues somewhat similarly, saying that "in the pursuit of music appreciation an *understanding of* music is of comparatively more value than *knowing about* music."[23]

Another result of ear training standardization, according to Cook, is that "it becomes increasingly difficult to conceive that music might work in other ways, or to hear it properly if it does."[24] The harder you listen the less you can understand music that works primarily in terms of timbre and texture, for example.[25] And this is, I think, especially the case for perfect pitch students, who are more prone to being boxed in to hearing in the system of labels and definitions that they have been so good at. However, students of all types are unable to listen, especially to new music, with an open mind, when ear training has focused only on the methods of one given system.

Edwin Gordon argues that "The responsibility of music educators is to teach students to understand all types of music" so students are prepared to enjoy and understand music of their own choosing.[26] Gordon argues further, saying that "To simply tell students what is good music or bad music or what type of music they should like…is becoming increasingly difficult to endorse as sound educational practice."[27] This may seem obvious to music educators, but the way that ear-training is oriented in academia is in a way that only attempts to teach one type of listening, in a world that demands multiplicities of such. In this way, ear

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[22] Ibid, 104.
[23] Gordon, *The Psychology of Music Teaching*, 117.
[24] Cook, *Music*, 104.
[25] Ibid, 104.
[26] Gordon, *The Psychology of Music Teaching*, 115.
[27] Ibid, 115-116.

training courses and professors are not even telling students what type of music they should like. It is much more subtle than that, built in to the curriculum and unquestioningly acted out.

In search of an answer for the academy, I would argue for private ear training. Of all things, we're not professional performers, teachers, composers, etc. Musicians are professional listeners. Listening needs to be an individualized priority. This could be risky, as the boxing in of listening might be even greater if professors were not careful. But, would it be as risky as putting different listeners into the same method of training? The biggest drawback for individualized ear training may be that private lessons are already what make music programs so expensive. So, what would it mean for universities to add more private lessons? Furthermore, why should music get more private instruction before the other departments? Certainly most departments would argue that individualized training is the most desirable.

While I will argue that ear training should be as individual as possible, I recognize the reasons why universities may not choose to do this. I do not know a way around those difficulties. However, I do know that in the visual arts, when students learn to see successfully, they learn to see so they can recreate what they see with their own eyes, not to recreate what they see through the trained eyes of a given system. That is called marketing class.

Since right now, we must work within the system that we have, I will discuss several goals that the system, the academic reality, can include within classes of multiple students. Ear training should have a portion of itself untied, unbound to the theory of music,

including tuning. We should go beyond theory, into timbre, into softness, into texture, into warmth, into tone, etc. The purpose of this would be to enter into a mysterious world of sound that is away from labelling, and therefore, away from the known. This would be to provide an understanding of listening inside and outside of oneself for all students. Professors would nurture students, all the while pushing students beyond knowledge boundaries out into the open space of sound.

To open up to the mystery of sound beyond knowledge and theory is discussed even by composer Robert Schumann, who said

> "Yes, lately I heard (in a dream) an angelic music filled with heavenly fifths, and this happened, so the angels assured me, because they had never found it necessary to study thorough-bass. Those for whom my words are intended will understand my dream."[28]

Here, Schumann seems to be saying that music must untie itself from theoretical constraints in order to allow innovation to be transcendent, or beautiful. Similarly, ear training must do the same, in order to allow students to conceive of the possibility of going beyond theoretical constraints. According to Philip Heseltine, "in creating and imagining, the mind's ear is employed to look forward into the future, to span the gulf between the known and the unknown."[29] Robert Schumann understood this, as did many others.

In 1981, Brand and Burnsed argued "that error-detection abilities must be addressed separately from ear training and theory venues and treated as a unique skill that should be

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[28] Schumann, *On music and Musicians*, 72.
[29] Philip Heseltine, "A Note on the Mind's Ear." *The Musical Times* 63.948 (1922): 88.

taught with the specific goal of discriminate hearing."[30] I think that Brand and Burnsed are arguing for something similar to what I am arguing for: a mode of listening outside of ear training class that is heavily connected to hearing inside one's own head (for Brand and Burnsed, this would be for the purpose of connecting visual symbols to their mind's ear, or detecting errors). Aside from error detection, though, being able to hear in the mind's ear, or to audiate, must be a focus of ear-training class for all students, and especially for "special needs" students in order to allow them to conceive of music and sound beyond their theoretical knowledge.

According to Edwin Gordon, who coined the term in 1975, Audiation is "the ability to hear and to comprehend music for which the sound is not physically present (as in recall), is no longer physically present (as in listening), or may never have been physically present (as in creativity and improvisation)."[31] Gordon makes several analogies between learning languages and learning music:

> "During the first year of life, you listened to everyone around you who spoke. You probably engaged in some vocal sounds, but your primary need was in acquiring a listening vocabulary of sounds and words (your first vocabulary), even though you did not understand everything being said."[32]

Gordon argues that our learning processes for both music and language are very similar. Typically, "we sequentially develop four music vocabularies: listening, performing (which is

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[30] Deborah A. Sheldon, "Effects of Contextual Sight-Singing and Aural Skills Training on Error-Detection Abilities." *Journal of Research in Music Education* 46.3 (1998): 386.
[31] James S. Hiatt and Sam Cross, "Teaching and Using Audiation in Classroom Instruction and Applied Lessons with Advanced Students." *Music Educators Journal* 92.5 (2006): 46.
[32] Gordon, "All About Audiation," 41.

the speaking of music), reading, and writing."[33] After we have acquired these four music vocabularies, "we are then prepared to be taught the theory of music."[34] Gordon sums up the whole of that process in one word: audiation.[35]

The process of hearing or "imaging" in one's own head is necessary for ear training education. Gordon argues that "audiating while performing music is like thinking while speaking a language."[36] Audiation may be especially important for perfect pitch students, as according to Sergeant, "absolute pitch might… be a prolongation…of a childhood trait in which the pitch level of a note is an important part of the child's mental image of it."[37] Being able to image or audiate sounds again may help these students develop their method of listening further. Moreover, the mind is not bound by equal temperament. Audiation goes beyond pitch, and into sound more generally. This will help perfect pitch students enter into a space where they hear without restrictive labels.

Music is sound, along with any other sounds, and "sound becomes music only through audiation, when, as with language, you translate the sounds in your mind to give them context."[38] Composers and musicians have heavily emphasized the importance of being able to hear inside ones' head, rather than just allowing sounds outside to "hit" the ears. For example, Schumann argues that students "must reach the point where (they) can hear the music from the printed page."[39] According to L.L. S. Lloyd, "we must think of pitch, not as

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[33] Ibid, 42.
[34] Ibid, 42.
[35] Ibid, 42.
[36] Hiatt and Cross, "Teaching and Using Audiation," 48.
[37] Sergeant, "Experimental Investigation," 141.
[38] Hiatt and Cross, "Teaching and Using Audiation," 42.
[39] Schumann, *On Music and Musicians*, 31.

something outside our heads that we listen to, but as something produced inside our heads by our ears and our brains."[40] Furthermore, Robert McGarry notes that "no matter how the sound is produced, no matter how the waves are transmitted, the result depends on what our ears send to the auditory centers of our brains."[41]

However, ear training class gives us reflexes to actually dodge the sounds that approach us. We say "quick, name this!" and the quicker students can name the perfect fifth, the better off they are. It's a similar practice to one I did when I was in Sunday School: Bible sword drills. In these exercises, the Sunday School teacher names a verse, and the student who can find it in the Bible the fastest, wins. I am sure now that these exercises did not reflect any understanding of the material, more so just reflex based memorization of the order of the books of the Bible. Now, these tests and methods have their place, but certainly we would regard Sunday School educators and curriculum writers as not completing their task if they were to build up their education using only sword drills.

The way it is now, ear training in academia conducts itself based upon a sword drill curriculum. Students don't spend any time in the chapter, so to speak, they just identify it. Professors show students the interval (for example) in a way that merely says "it exists." Schoenberg argues that "a trained ear is valuable, but not especially so if the ear is the gateway to the auditory sense rather than the musical mind.[42]" Ear training class should test more than just auditory reflexes and labelling ability. Schoenberg argues, in a way similar to

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[40] LL. S. Lloyd, "The Perception of Pitch." *The Musical Times* 82.1178 (1941): 141.
[41] McGarry, "Equal Temperament," 56.
[42] Arnold Schoenberg, "Eartraining through Composing." Ed. Leonard Stein. *Style and Idea: Selected Writings of Arnold Schoenberg.* (Berkeley and Los Angeles: U of California Press, 1975), 379.

Schumann, that "like harmony, counterpoint and other theoretical studies, ear-training is not an end in itself, but only a step towards musicianship."[43] For the remainder of this paper, I will outline several exercises and concepts that will allow students to explore sound in ear training class in a way that will open up the students' listening mind, rather than close it. These exercises are beneficial to all students, but especially students who are prone to listening in a sort of "survival mode," which closes off their ability to listen perhaps even further than most.

Edwin Gordon emphasizes three aspects of exercises that will allow students to develop their ears: repetition, variety, silence.[44] Regarding exercises emphasizing repetition, once perfect pitch students have gotten past a chord's quality, for example, teachers need to allow the students to spend time hearing the chord, hearing how the pitches work together. It is not enough to just have the students name it. Or, if they are working on single pitches, students may be allowed to listen inside the pitch, and to listen to the onset and decay of the pitch or sound. This will allow an exploration beyond labelling for students who are stuck inside a labelling system. Repetition is necessary because ear training classes are often too fast paced; chords (for example) are played too quickly. Perfect pitch students are unable to explore the sounds; they can't hear the onset, the attack, the inside, the envelope, and the decay.

Exercises for variation would include allowing the students to listen to sonorities or sounds played with different textures, timbres, lengths, attacks, dynamics, ranges, etc. This

[43] Ibid, 379.
[44] Gordon, "All About Audiation," 43.

variation will not only challenge the students, but will also allow them to start to hear similarities in sonority among consistently changing textures. We need to allow more analytical listeners to do what they need to do: to take sounds apart, to focus on the parts that create the whole. I think that this will help them to hear the whole in their own way. Robert Schumann also argues that students should "start early to observe the tone and character of the different instruments" and should "try to impress the tone color peculiar to each upon your ear."[45] We should be careful not to force perfect pitch students to attempt to synthesize, but rather, allow the students to analyze the multiplicities of miniscule parts, as they do naturally.

Regarding silence, it is necessary that there is some time allotted between sounds for the perfect pitch students to attempt to hear sounds within their heads. In general, students may imagine the voices of others, the sound of the screen door slam, the hum of the space heater, etc. This is necessary, because the student will be able to associate the space in their head that the pitch or sound finds itself with something beyond a label that is completely external to their self. This is a disciplining practice. It is necessary for perfect pitch students, because in ear-training classes, they have disciplined themselves to hear what happens externally, and disconnect the sound from themselves. By listening inside their heads, students will be able to discipline themselves to a different landscape.

Perfect pitch students could be aided by disciplining themselves to listen to the sonorities of single pitches, even out of tune pitches. Hopefully, this would help them to hear the sonorities of combined pitches. One specific exercise to listen to silence even within sonority

[45] Schumann, *On Music and Musicians*, 35.

is by playing a cluster, and removing a pitch or pitches of the cluster. Students have to find the "silence," or identify the missing note(s) in the cluster. By finding it, they will be audiating. This will help them to learn to hear more sonority. We know they can name the chord, but they should be pushed to do more, to go beyond, and listen for what their mind is providing. For example, when Beethoven's compositions featured a fifth in the bass octaves compared to his compositions in which the bass octaves featured no fifth sound totally different. Beethoven knew what the differences in those sonorities meant in the sound world. Perfect pitch students need to be given the chance to hear this and discuss this. And when they can't learn sonority, it is extremely difficult for them to hear these differences outside of pitch naming.

After silence and audiation, students may want to try to recreate, or phonate, the sound that they are hearing, through their voices, their instruments, or anything in the room. The students may want to emphasise the different attack of the sound or the decay. Being able to hear with their own voices or bodies will allow the students even further to find the physical space where these sounds live, again allowing for a method of listening analytically. Focusing on small parts is not a bad thing—just for some students, a necessary thing.

Allison Garner, in her essay "Singing and Moving: Teaching Strategies for Audiation in Children," discusses how activities grounded in the theories of Edwin Gordon and Howard Gardner use both movement and "the voice to nurture a child's ability to listen with discernment both from within and outside of himself or herself."[46] Garner argues that

[46] A. Maerker Garner, "Singing and Moving: Teaching Strategies for Audiation in Children." *Music Educators Journal* 95.4 (2009): 46.

"developing the ear and developing the voice go hand in hand."[47] According to Sergeant, "it seems probable that the child's most personal experience of musical sounds is that of his own infant vocalizations, of which pitch will naturally be an important factor,"[48] and if it is true that perfect pitch may be the perpetuation of a childhood trait of mental imaging, this may be reason for these students to continue practicing their phonation. According to Heseltine, "thought is not thought until it is embodied in some potential form of expression."[49] Through phonation, the student can "manipulate sound that he or she hears either within or outside of his or her own head,"[50] and this is of utmost importance: this is the creative side of listening. This is the type of listening that Gordon argues for, when he speaks of imparting "sound before sign."[51]

Gordon argues that there is a progression: from aural – oral – and *then* to visual.[52] At this time, students may perform dictation exercises and such, in order to take what they have heard and spoken and to put that in a physical form that others may read and speak. Hiatt and Cross argue that at advanced levels it is necessary to connect audiation skills with the ability to read music. Thus, much college-level audiational training involves "audiating what is seen in notation without physically hearing any sound."[53] This is a sort of silent sight singing, and this would likely prove beneficial to perfect pitch students, as they can audiate different textures and such.

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[47] Ibid, 48.
[48] Sergeant, "Experimental Investigation," 142.
[49] Heseltine, "A Note," 90.
[50] Garner, "Singing and Moving," 48.
[51] Gordon, *The Psychology of Music Teaching,* 61.
[52] Hiatt and Cross, "Teaching and Using Audiation," 47.
[53] Ibid, 46.

With perfect pitch students, sonorities may be best approached with a layered dictation beginning with counterpoint, so they may follow individual voices, before entering into chorale style dictation. It may be overwhelming for perfect pitch students to start with four voice choral dictation, but they will be able to do it in time. Any dictation based only on one pitch (such as melodies, intervals, etc.), is likely not beneficial for the perfect pitch student, and should be avoided if possible.

In conclusion, contemporary Music varies quite a bit from standard methods of tuning and theory. Academic ear training has succeeded in ignoring this for a long time. There are circles and groups of musicians playing, writing, hearing these ways. As it stands, we are training our students to have selective hearing. We are training them to ignore, to say: "I don't listen that way," "it's not for me," or, worst of all, "that's not good music." Hearing is not standard; people hear in multiple ways. But when our ear training is boxed in, we can't. And it's especially sad when perfect pitch students are boxed in. They should have the option along with every other student, but they get stuck, because the method of training is just not for them. Schoenberg argues that an art teacher will allow "even the talented pupil" to "find some necessity within himself, and the chance of being able to do something he alone can do, even though there are others greater than he."[54] We need to send students, including perfect pitch students, including talented students, into the unknown while they are in university, while we are beside them, rather than sending them out after they've been "trained," into the unknown to fend for themselves.

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[54] Arnold Schoenberg, "Problems in Teaching Art." Ed. Leonard Stein. *Style and Idea: Selected Writings of Arnold Schoenberg*. Trans. Leo Black. (Berkeley and Los Angeles: U of California Press, 1975), 369.

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