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Holistic and ecologically valid aural training within culturally diverse music education contexts

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Abstract

This is a transcript of a trial lecture held at the Norwegian Academy of Music on December 14th, 2022, as part of Ville Langfeldt's public PhD defense. The subject given by the committee was: "Holistic and ecologically valid aural training within culturally diverse music education contexts". The lecture examined the concepts of holism and ecological validity in aural training in light of research, different teaching traditions, recent pedagogical developments, and the professional requirements of contemporary musicianship. Implications for aural training teaching methods were discussed.

Keywords: *aural training, perception, multimodality, cultural differences*

The topic that the adjudication committee has provided for this lecture demands some clarification. For example, what is "holistic" aural training, and in what sense can it be claimed to be "ecologically valid"? My lecture will be structured around these two terms, first separately and then in combination. The second half of the topic, "within culturally diverse music education contexts", will be discussed along the way.

The word *holistic* denotes something that concerns a whole rather than parts. It has more than one possible meaning when used to describe aural training, and I will mention two of them.

First, "holistic" aural training might denote a pedagogical integration of elements that might otherwise be taught in a separate or fragmented manner. In many cases, this refers specifically to an integration of aural training with music theory, which are commonly

taught as distinct subjects in Western higher music education. A few examples are textbooks like Laitz's *The Complete Musician: An Integrated Approach to Theory, Analysis, and Listening* (2016); Cleland and Dobrea-Grindahl's *Developing Musicianship through Aural Skills* (2020), which promises a "holistic approach to sight singing and ear training"; or Sveidahl and Agerskov's (2002) book about "integrated aural training" which sets out to tear down the wall between the "two rooms" of aural training and music theory.

These are examples of what could be called a *pedagogical* holism in aural training. In this lecture, however, I will be concentrating on a different notion of "holistic": that of holistic *perception*.

As the committee is aware, I have written a thesis on the subject of holistic perception, specifically the holistic identification of harmony (Langfeldt, 2022). However, the subject given for this lecture is not holistic *harmony* training, but rather holistic *aural* training, which implies a broader context. Therefore, I will zoom out a bit from my own area of research, and instead reflect on holistic perception of music in general, and how this relates to aural training.

Still, I will rely on one of the main arguments of my PhD thesis, which is that holistic perception of music is multimodal and relies on much more than our sense of hearing. What do I mean by this? Most of us have learned, at some point in our lives, that we have five separate senses: vision, hearing, smell, taste, and touch. Nevertheless, as Godøy (2017) points out, there is now mounting evidence that these senses are not isolated from each other, but rather work together and complement each other.

The discovery of mirror neurons has also indicated that the whole body is involved in perception. When we see someone perform an action, neurons in our own premotor cortex fire off in the same way as if we were performing the action ourselves. This seems to be true even for hearing someone perform an action. Several studies have found that when piano players listen to piano pieces, increased activity can be observed in the motor areas of their brains (for an overview, see Gordon et al., 2018). Therefore, the current understanding is that music is not passively heard, but actively perceived as the physical movements that cause the music.

Furthermore, music is not just any sound. It is capable of communicating all kinds of meanings, ideas, intuitions, associations, feelings, and affects. These are all part of the holistic character of the musical experience. Therefore, Leman and Maes (2014) suggest that our brain when listening to music is best understood as a system that connects sensory, motor, and introspective states in an integrated network. For the sake of simplicity I am using the term *holistic perception* to include all these notions.

It is important to stress that what music is capable of communicating has less to do with the music itself than it has to do with the experience, enculturation, memory, knowledge, social context etc. of the person hearing it. Music can carry a whole range of perceptual meanings, but these are not mobilized identically by two individuals. As an example,

play two notes on the piano; first one on the left side of the keyboard, then one on the right side. Most of us would likely refer to the first tone as “lower” and the second tone as “higher”. This is the common Western way to conceptualize differences between pitches: We conceive of them as being placed along a vertical continuum ranging from high to low. There are natural explanations for why we have chosen this specific conceptualization. However, we might easily have chosen another altogether.

Although we do use the high–low conceptualization in Norwegian, it is even more common to say that the first tone is “dark” (*mørk*) and the second tone is “bright” (*lys*). In the Gamelan traditions of Indonesia, they conceptualize pitch as size. The first tone would be “large” and the second would be “small” (Zbikowski, 2002). This makes perfect sense when you consider the instruments used in Gamelan music—large instruments make “large” sounds, small instruments make “small” sounds. Farsi speakers describe pitches as “thick” or “thin” (Dolscheid et al., 2013), while the Bashi people of central Africa use “strong” and “weak” (Merriam, 1964). In Liberia it is “heavy” and “light” (Stone, 1981), while the Kaluli people of Papua New Guinea base their pitch conceptualization on the flow of water (Zbikowski, 2002). The Suyá people of the Amazon say that pitches are “old” or “young”, which reflects how the human voice changes in the course of a lifetime (Zbikowski, 2002). And finally, in the Shona tradition in Zimbabwe low pitches are referred to as “crocodile”; while high pitches are called “those who follow crocodiles” (Eitan & Timmers, 2010).

My point is that human conceptualization of sound is incredibly varied and flexible, even at the most basic level such as how we perceive pitch. When we start considering the rich and complex sounds of music, the variation is immense. Still, music may also communicate perceptual meanings that are shared by large groups of people or even whole cultures, which is a topic I have discussed in more detail in my thesis.

This brings up another question: If all perception is holistic by nature, doesn’t that mean that all aural training must also be holistic, since aural training deals with perception? Not necessarily. It is a pedagogical choice to mobilize this holism in the aural training classroom. We might consider the simple example of working with intervals. Learning to sing the different intervals without the aid of a piano is a staple of Western aural training. But learning them simply as sound, as a rather abstract distance between two pitches, can be very challenging. Because of this, aural training classes commonly utilize one or several pedagogical tools intended to conceptualize the intervals as something more than just sound. For instance, the use of solmization, solfège hand signs, or remembering the song *Maria* from *West Side Story* when trying to sing a tritone.

But these are just a few of many possibilities. Singing intervals can potentially also involve visual information, such as music notation or the layout of piano keys. It can involve motor memory related to the degree of tension in the vocal cords, or to the physical stretch between two tones on a piano. (Ask any piano player, and they will be able to show you with their hand exactly how large an octave is.) It can involve musical memory, affective

qualities, and cultural context. It also involves the knowledge of theoretical labels, such as “major seventh” or “minor sixth”. However, the student might not be aware that they know all this, and that it might have relevance to aural training. That is why the teacher must be aware. Steve Larson (1995) calls this *integrated music learning*, and offers a diagram that can be passed out to students (Fig. 1). It illustrates different ways of knowing, based on the cue words “fingers”, “eyes”, “mind”, “voice”, “ears”, “heart” (which refers to the emotional dimension), and “feet”. One corner is left blank because there might be other ways of knowing. Larson would ask the students to memorize this model, and then would make sure they not only learned all these aspects for each topic they studied, but that they also found ways to integrate the aspects in their perceptual awareness.

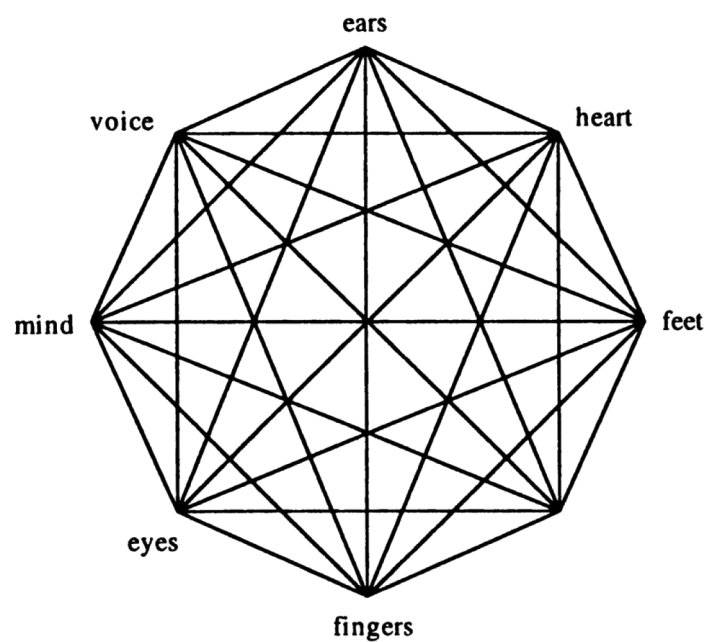


Figure 1: Larson's diagram of musical knowledge relationships (Larson, 1995, p. 77).

What I am suggesting is that incorporating holistic perception in aural training necessitates an inclusive attitude towards the individual student's “life-world”, as Husserlian phenomenology would call it. The student's own experiences, competences, imagination, memory, body, visualizations, associations, attitudes, and emotions should all be considered latent intuitive knowledge. In a holistic approach to aural training, the teacher will help the student become aware of such intuitive knowledge, convince them that it has value, and encourage them to mobilize it in the development of aural discrimination abilities and the construction of new explicit knowledge.

A multimodal or holistic approach to aural training is not restricted to adult students, or to a European conservatory tradition. Lam (2021) reports an experiment from Hong Kong where primary school children used drama exercises as a way of learning pitch awareness. The drama exercises were specifically constructed to integrate ear, eye, and voice.

The children who participated in these exercises showed a greater improvement on pitch identification tests than students in the control group.

The approach I am describing here is distinctly student-centered. It places a lot of value on the individual student and their personal way of experiencing music. As Campbell and Scott-Kassner (2005) point out, knowing the modality strengths of each individual student is helpful to the teacher who wants to facilitate holistic perception of music. This attitude places the student at the center of the learning environment; but not all music education has a student-centered ideal.

The master–apprentice relationship, for example, has a strong tradition in both Western and non-Western music cultures. The young student enters a learning environment in which the master is the source of knowledge and a greater emphasis is placed on the music, the work, or the art of performance than on the personal dispositions of the student. Can holistic aural training exist in this environment? I would like to play a video clip before we consider this question.¹

This is an example of *konnakol* in South Indian classical music, which is the reciting of rhythmic syllables. It is connected to drumming, and drum students will typically learn to recite these rhythms as a way of internalizing them before actually playing them on the drum. But as is clear from the video, it is also an independent vocal art form in itself. North Indian classical music has similar traditions, as does taiko drumming in Japan. Is this aural training? I think there is no doubt about that. Is it *holistic* aural training? That is a more difficult question. I admit my knowledge of *konnakol* is superficial, but it seems to rely on a traditional master–apprentice model. The master demonstrates; the student imitates. However, it is obviously multimodal. The model incorporates several of the categories in Larson’s model: fingers, mind, voice, ears, and heart. It also incorporates the open category which is left blank in Larson’s model, and which could contain some explanation for how such rhythmic mastery is humanly possible.

I recall a television interview about 10 years ago of Indian-Norwegian percussionist and medical doctor Jai Shankar. Shankar demonstrated how he used Indian rhythmic syllables during medical school to memorize the Latin names of all the muscles in the human body. Even years later, he was able to recite them in much the same manner as we just heard. Although I was unable to find a copy of the interview, the anecdote illustrates a relevant point: There is a great deal of personal conceptualization and association going on behind what we can see, even if this is not necessarily an intended part of the pedagogical tradition. In this sense I think that even though the concept of holistic aural training is embedded in a Western conservatory ideal, it can also exist in radically different cultural contexts; although it will take different forms according to the specific cultural context at

1 The video may be viewed at <https://youtu.be/iurhjlBum0o?t=135> (from 2:15 to 3:20).

hand. Hence, though not all aural training is holistic, I would argue that most aural training has the potential to be holistic in the somewhat wider meaning that I have pursued here.

Moving on to the next concept in the topic, it is important to understand what *ecological validity* is, and how it applies to aural training. The term itself has a quite specific meaning. In the context of research, ecological validity concerns whether the findings of a study can be generalized to real-life settings (Andrade, 2018). If an experiment is designed in such a way that the circumstances are very artificial or constrained, the experiment can be said to have low ecological validity. What happens in the lab is unlikely to be representative of what would happen in the real world.

What, then, is ecologically valid aural training? To explain this, I will indulge in a story about Finn Mortensen (1922–1983), the first Norwegian professor of composition. There are numerous anecdotes about the charismatic Mortensen; but according to this one, he once stated that half the members of the Norwegian Composers' Association would fail the Music Academy's aural training exam.² Although I cannot vouch for the veracity of this anecdote, it is worth considering what its meaning might be. I think that for the current generation of Norwegian music students, Mortensen's claim is puzzling. Is he bashing his composer colleagues, calling them bad musicians?

To understand, we need to appreciate how Western aural training has changed over the last decades. As late as 1994, Covington and Lord (1994) describe what they call an endemic problem in aural training. The problem is that the aural training students receive does not match what they will do as professionals. Covington and Lord write:

Since aural training takes place in a learning environment so isolated from real-world contexts, and since paper-and-pencil is the primary means of response, students find aural training to be disconnected from their immediate musical needs, as well as those of longer range. Shouldn't they instead be recognizing the connections with everything they do in the rest of their everyday musical lives? (1994, pp. 159–160)

What they seem to be addressing here is the lack of ecological validity in aural training at the time. The skills that are taught in the classroom do not transfer well to the outside world.

While Covington and Lord wrote from an American context, I think their concern articulates what may have been Mortensen's point: Aural training in his time was out of touch with the practical musical world of contemporary composers. Composers occupied with clusters, dodecaphonic simultaneities, and microtonal chords would have had limited professional incentive for learning to aurally identify a cadential six-four chord and label it correctly.

² My source is Rolf Inge Godøy in personal communication.

But decades after Mortensen's remarks, the aural training I experienced in my own time as a student at the academy contained real-world examples from all eras of Western art music. It also contained examples from pop music, rock, and jazz, from Norwegian, Bulgarian and Cuban folk music, from West African drumming patterns, Tuvan throat-singing, and Carnatic ragas. It contained tonal music, atonal music, microtonality, and just intonation. It even contained birdsong. In other words, the aural training I received as a student was very different from the one Mortensen allegedly criticized decades ago. The aural training I received mirrored the musical reality that surrounded us in the real world outside the Academy. It utilized and encouraged the musical omnivorousness and stylistic flexibility that young musicians today possess—and must possess—to be successful portfolio musicians, engaging in a myriad of musical contexts and constellations (e.g., Campbell et al., 2016; Francis, 2021; Stephens, 2003).

It seems that my experience is representative. In a survey of 104 students here at the Norwegian Academy of Music, Reitan (2006) found that 93% considered aural training an “important” subject, and 84% considered it a “useful” subject. Even if there is a certain amusement to be found in the fact that students considered it more important than useful, the high percentage of both seems to support the argument I am making here: Aural training at this institution has become more ecologically valid since the time of Mortensen's lamentation. (I will not venture an opinion on how this change has impacted the aural skills of Norwegian composers.)

The situation here at the Academy, however, is not necessarily representative of aural training elsewhere. Comparing Reitan's findings to similar studies from other countries, Andrianopoulou (2019) states that professional musicians, teachers, and students alike more often show negative attitudes towards aural training. Yet none of those studies is from the last decade, so things might also be improving internationally. In addition, recent Western pedagogical literature shows a strong trend for acknowledging that the role of the musician has changed considerably over the last generation, and that aural training and music theory must modernize accordingly (e.g., Andrianopoulou, 2019; Campbell et al., 2016; Clendinning, 2017; Kulma & Naxer, 2014; London, 2020; Richards, 2015; Snodgrass, 2020). Parkin (2021) maintains that the possible components of a portfolio career require skills and abilities way beyond those traditionally provided in music education. Stillie and Moir (2021) argue that given this situation, students “need to develop aural skills that are situated in, and attuned to, a context that will be relevant and valuable to *their* musical experience” (p. 179, emphasis in original).

In practice, the specific contents of such an approach will naturally vary depending on the educational context at hand. Still, within the European-American conservatory tradition, there seem to be good arguments for striving for stylistic diversity in aural training, regardless of whether students belong to a classical music, jazz, pop/rock, or folk music program. This view is supported by Stephens (2003) in a book about musicianship in the

21st century. Stephens suggests, “the richer the aural environment the more positive the musical experience and the resultant musicianship education is likely to be for students” (p. 284).

This is not necessarily a one-size-fits-all philosophy. In many folk music contexts, both Western and non-Western, music education is arguably primarily embedded in an apprenticeship tradition in which the relevant skills of a musician are strongly connected to the preservation of local culture. In such educational contexts, the notion of ecological validity in aural training (or aural training-like activities) may favor musical specialization over musical diversity. Rather than preparing students for a multifaceted portfolio career, one may choose to focus entirely on mastering the local tradition. Thus, the example of *konnakol* is arguably a highly ecologically valid form of aural training, even if narrowly committed to local music. The connection between student training activities and future profession appears to be strong. On the other hand, one can make the argument that musical collaboration across borders, genres, and musical traditions has become the new mainstream all over the world. In this regard, transferability of musical proficiency from the local context to other contexts could be seen as a relevant professional competence in its own right; and so justifying a more musically diverse form of aural training in those locally embedded education contexts.

I have made the point that the ecological validity of aural training is connected to the musical material students encounter. For many aural training contexts, a handful of aspects seem to be important in this regard, such as relevance, stylistic diversity, and the musical quality of the examples used. In addition, I think it is just as important to consider the working methods used. If aural training is to be ecologically valid, the competencies students acquire from it must be both relevant and applicable to real-life musical situations. Therefore, classroom activities should mimic the practical problem-solving that characterizes such real-life situations.

The traditional use of pencil and paper is, of course, only one of many possible working methods. Incorporating the whole body in various ways and using one’s instrument are other ways of bringing activities closer to real life. And this, I think, shows the connection to the holistic aural training I just discussed. By allowing students to use a variety of response forms and ways of knowing (as illustrated in Larson’s model), aural training also becomes more ecologically valid.

Furthermore, real-life problem-solving is both non-linear and divergent. Musical challenges in the professional life of a musician rarely come in the form of a melodic dictation where you start at the beginning, finish at the end, and there is only one correct answer. Real-life problem-solving is working at your own pace, repeating whenever you need to, jumping back and forth, shifting between the local details and a global whole. Real-life problem-solving includes having to consider several possible approaches and solutions, and choosing the one that best suits the present context or situation. Parkin (2021) points

out some simple ways of accommodating this in the classroom: Traditional aural training activities like dictation can be made more non-linear by distributing the exercise as a sound file to the students' phones, tablets or laptops, if such equipment is available. This way, students can choose their own listening strategies instead of having one imposed by the examiner. More divergent problem-solving can be implemented by incorporating a greater amount of improvisation, which Parkin (2021) refers to as the missing link between theory and practice.

The outline of an ecologically valid aural training I have offered here seems to correspond closely to an aural training course that was designed at the Royal College of Music in London in 2008. The course, entitled *Aural in Professional Contexts*, aims to equip “aspirant professional musicians with real-world aural skills of direct relevance to their working lives as professional musicians” (Francis, 2021, p. 211). Francis sums up the pedagogical approach of the course: “Real music (as opposed to especially composed material) is used as stimulus material in class, including classical, popular, and folk music from around the world. Students are encouraged to develop and apply their diagnostic and creative skills through transcription and are given some choice as to their assessment material” (Francis, 2021, p. 211).

To combine the two terms, then, a holistic and ecologically valid aural training is a fundamentally dynamic approach which seeks to utilize the full richness of musical experience. It acknowledges that perception is multimodal, encompassing both sensory, motor, and introspective elements. It encourages each student's personalized construction of knowledge through the active exploration of these elements. It is strongly oriented towards the specific music profession for which aural training is preparation. It seeks to have a direct connection to this professional context through the music it engages with, and the working methods that it uses.

In the abovementioned work, Andrianopoulou (2019) summarizes the Western aural training tradition and introduces the idea of aural education as a “more comprehensive, rich, and relevant” version of aural training (Andrianopoulou, 2019, p. 183). This idea resonates in several ways with what I have been discussing here today, and its use of the words “rich” and “relevant” is virtually synonymous with the words “holistic” and “ecologically valid”, respectively.

As can be understood from this lecture, holistic and ecologically valid aural training is not a teaching method as much as a pedagogical ideal. It is always embedded in the specific social and cultural context in which it takes place, and related to the needs of the specific individuals involved. In other words, its primary context is always local, personal, and idiosyncratic. Therefore, holistic and ecologically valid aural training—as I have defined it—may in principle apply to any music education context. However, as I hope is clear from my examples from around the world, its specific expression in each of those contexts will be unique.

Author biography

Ville Langfeldt defended his PhD in Music Education at the Norwegian Academy of Music in 2022, with a thesis on holistic identification of harmony. He has taught music theory and aural training at the same institution, and is also an active film composer.

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