Development of "predictive perception" of music in children

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Abstract

Here I propose a theoretical model and a practical method of predictive music comprehension and its development in children two years of age and up. The elements of music speech and their connections are learned in special sequence from less probable to more probable. The more often an element appears in classical and modern music, as well as appropriate styles of folklore, the more probable it is. The program presupposes lessons held weekly or twice a week. The program is tested in one-on-one lessons, in groups with 3-8 children, as well as larger groups.

The paper describes the following forms of work:

- learning probable rhythmic elements and patterns by means of special form of "rhythmic solmization";

- learning probable melodic elements and patterns by means of a special form of sol-fa, including a combination of movable tonic and the fixed Do, as well as a special approach to associations between degrees of the relative scale and the 12 colours of the spectrum;

- learning probable harmonic elements and patterns by means of special form of sol-fa.

This method is illustrated with graphic examples (music) and video fragments from lessons. As a main result: A subconscious reaction by the children when hearing the described elements of musical speech in the process of listening to classical and modern music and high attention and interest on hearing. As a side result: It also could be a good basis for those children who will decide to pursue professional music education in adolescence.

Keywords

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Perception, anticipation, comprehension, sol-fa, rhythmic patterns, perfect pitch.

INTRODUCTION

The problem of understanding music has a number of aspects. Perhaps the most important is predicting what comes next during the process of perception. This problem is not exclusive to music. Perception of every kind of information implies ability to predict. Predicting does not mean guessing precisely what signals will appear in the information stream, but is instead probabilistic. To understand a message in a natural language one needs to be familiar with semantic fields of words and with grammatical sequences. Regarding music this could mean the most expected elements of musical speech, such as certain sounds, chords, rhythmic and melodic patterns, and structural units. The more often an element appears in classical and modern music, as well as appropriate styles of folklore, the more probable it is.

AIMS, EXPECTED RESULTS, AND NECESSARY CONDITIONS

The aims of the method are:

- to make an analysis of the statistically relevant sphere of musical texts composed in a certain tradition (Western, from the seventeenth to twentieth centuries, and appropriate folk styles); due to this analysis to identify typical sequences of "language elements", especially endings of musical structures. This idea also has place in linguistics. For example, distribution analysis can be used to analyze languages that are unknown to the linguist (Coulmas,1999, p. 132; Harris,1981, pp. 33-49);

- by means of received information to develop a series of exercises, using folk songs, children songs and fragments of classical compositions;

- as a result to develop a subconsciously predictive perception of music in children.

The program described below presupposes lessons held weekly or twice a week under the leadership of specially trained teachers with a group of 3 to 8 children who are 2 to 8 years of age. These lessons can be held in preparatory classes of a music school, in kindergarten, in community, and so on. Groups with more than 8 children (for instance, in primary school) are possible as well, but the results would be reached in more modest tempo. Individual work is also possible with more impressive results than those described below.

LEARNING PROBABLE RHYTHMIC ELEMENTS AND PATTERNS

Rhythmic "solmization" underlies the syllabic names of the rhythmic patterns. Children – it is possible to begin with two-year-olds – learn the suggested rhythmic units. Less than five special syllables underlie the following denotatums, not the durations of the notes:

(1) strong position within a phrase (syllable "din");

(2) strong position within a beat (syllable "dee [di]");

(3) weak position within a beat (syllable "lee [li]");

(4) the weakest position within a beat (syllable "ghee [gi]").

Later on, two further syllables "leen [lin]" and "gheen [gin]" are used in order to designate a strong position within a phrase falling on syncope, but those denotatum are out of consideration in the given presentation.
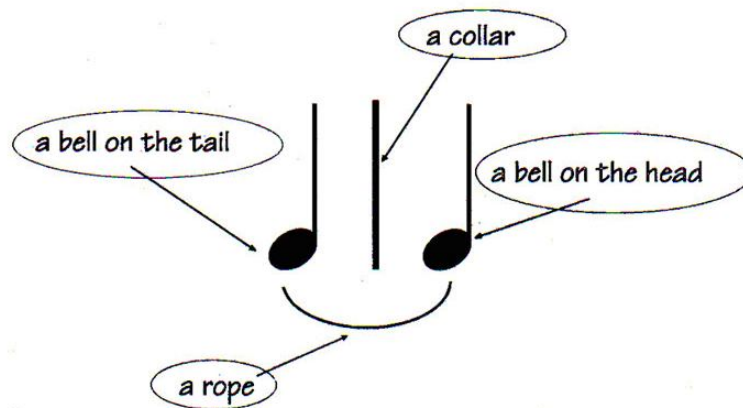

Figure 1 (for two-three years old children): *A Fairy Tale about a Magic Dragon.* This is a Magic Dragon. His name is [Di-´Din].

Figure 2 (for four-five years old children): *Vladimir Shayinsky. A Crocodile's Song.* There are four Magic Dragons.

dili–Din dili–Din dili–dili–dili–Din dili–dili–dili–di–di–Din

Figure 3 (for six-seven years old children): *Dmitry Kabalevsky. Clowns.* There are four Magic Dragons. Two of them have only one tail. The third has three tails. And the last one has as many as five tails.

li–Dingili   li–Dingili   li– Dingili   ligi–digili–Din digili–dili–dili–dili–Dindi

Figure 4 (for eight-nine years old children): *Béla Bartók. Romanian dance.* There are five musical phrases.

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di gi li– di li li–Din   li– di gili– dilili– Din   li– di li– di lili–

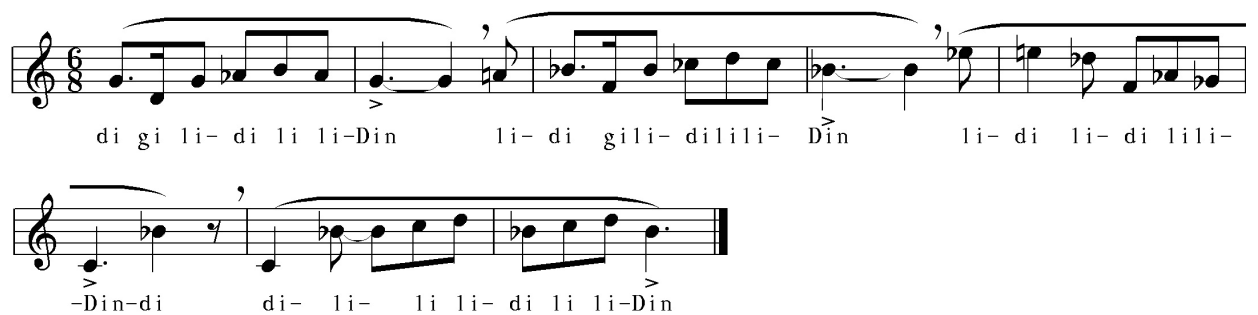–Din–di   di– li–   li li– di li li–Din

Figure 5 (for nine-ten years old children): *Alban Berg. Wozzeck (Marie's Lullaby).* There are four phrases in ternary rhythm with dotted notes.

The idea to designate the accents instead of durations is not new. The so-called French Time-Names system by Galin-Paris-Chevé in its ripe version is based on this idea (Chevé & Paris, 1846, p. 261). Among the methods of 20th century the same is the approach of American educator Edwin E. Gordon (1997, pp. 170-171; 2000, pp. 74-87). The new idea suggested in this presentation is to attach great importance to the culmination of the phrase, to designate it with a special sign, and consequently to master rhythmic units not isolated from the meaningful musical context. As a result, four-year old children are able to write down the rhythm of a short piece as a whole in complete details including phrases, culminations of phrases, and caesuras between them, and to react with subconscious expectations to rhythmic elements in music *(video demonstration)*.

LEARNING PROBABLE MELODIC ELEMENTS AND PATTERNS

A special kind of sol-fa underlies the suggested program in musical literature. Under "a special kind of sol-fa" here is implied singing and naming the degrees of the sound-pitch system including a combination of movable tonic using modified syllables by Estonian educator Heino Kaljuste (Selke, 2006, p. 619) and the fixed Do after Guidonian syllables, as well as a special approach to associations between degrees of the relative scale and the 12 colours of the spectrum (Brainin, 2007, pp. 53-58). Children – it is possible to begin with two-year-olds – learn songs and the suggested fragments from musical compositions by heart simply because of repetition during many lessons. Later on they have to recognize a familiar fragment in the entire composition, which they listen to on the recording. This recording consists of specially selected examples. The principle of systematization of didactic repertoire is a gradual augmentation of the "melodic dictionary". That means a gradual augmentation of the quantity of used degrees and their combinations in a special sequence:

- melodies consisting of the V degree and the upper tonic;

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- melodies consisting of the V and major VI and the upper tonic;
- melodies consisting of the V, major VI and VII and the upper tonic;
- melodies consisting of the V, major VI and VII, the upper tonic, and the major II above the upper tonic;
- melodies consisting of the V, major VI and VII, the upper tonic, and the major II and III above the upper tonic;
- melodies consisting of the V, major VI and VII, upper tonic, the major II and III above the upper tonic, and the upper V degree;
- melodies consisting of all the major degrees from V to V and the middle tonic.

By avoiding the III degree in melodies it is possible to be familiar with melodic minor which is represented in harmony (for instance, *"Children's chorus"* from *"Carmen"* by Bizet).

Special exercises (melodic cadences) are used to learn relationships between the tonal centre and the tonal periphery (it is possible to begin with five-year-old children):

Major cadences with two notes

The rest of the major cadences

The rest of the degrees

Figure 6.

Through these exercises children get predictive imagination of tonal periphery. Hearing the unstable degree they imagine the continuation of the appropriate cadence subconsciously and recognize the unstable degree by means of the continuation of the song/melody.

Every musical fragment makes "an information field" around itself as well. After a few years of contact with many "fields", empty spaces will be filled and the whole picture will be restructured like the "aha" experience of Gestalt psychology. As a result, six-year old children can accurately recognise all single major degrees in the scale both within music and when played in isolation and the older children can recognize all the chromatic degrees in the scale *(video demonstration)*.

LEARNING PROBABLE HARMONIC ELEMENTS AND PATTERNS

Sol-fa of seventh chords, their inversions and typical solutions underlie the suggested program in learning harmony functions. As for triads and their inversions, there are special songs starting with the appropriate chord. Predictive hearing helps to understand a chord not through the intervals of the chord, but through the continuation of the song. It is possible to begin with five-year-olds. After some training it is not necessary to sing the entire song to guess the continuation; instead, three notes after a chord are sufficient. Later on it is not necessary to sing the chords at all.

For example, here are songs for triads and their inversions:

Triads from C (major and minor)

1st inversions from C (major and minor)

2nd inversions from C (major and minor)

Figure 7.

As a result, six-year old children can surely recognise major and minor triads and their inversions in various keys (all "white" chords, which they can also recognize in the correct key, which means they get a kind of quasi-absolute pitch as a side effect), and eight-year old children can accurately recognise some seventh chords and their inversions. In special cases (in one-on-one lessons) six-year old children can recognize complicated chords with seconds in all the possible keys, which means they really get perfect pitch as a side effect, and can memorize harmonic sequences and harmonize melody using correct four-voicing voice-leading *(video demonstration)*.

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RANGE OF APPLICATION

The program is tested

- in one-to-one lessons and in groups with 3-8 children in music schools in Germany (Brainin schools of music, Backnang, Hanover, and Haltern-am-See), in Colombia (Fundación Unimusica, Bogotá and Universidad de Caldas, Manizales (Hernandez, 2007, pp. 67-82), in Lithuania (Chorus Music School Varpelis, Kaunas and Kauno Vaikų Ir Moksleivių Laisvalaikio Rūmai, Kaunas), and in Russia (Gnessin Special Secondary School of music for highly gifted children, Moscow and others);

- in groups with more than 8 children in primary schools in Germany, Russia and Ukraine;

- in kindergartens in Germany.

CONCLUSION

All these results would be less important in general music education were they not accompanied with a subconscious reaction by the children when hearing the described elements of musical speech in the process of listening to music and with high attention and interest on hearing as a main result. In any case, it is also a good basis for those children who will decide to pursue professional music education in adolescence.

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