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On Harmony as an Element in Music

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Some time ago we had the opportunity to hear a talk by Prof. Ansermet where, among other things, he advanced the theory that twelve-tone music is not a natural form of music since it is lacking in two of the fundamental elements of music: *melody* and *harmony* (possibly also the third: *rhythm*). These fundamentals are preferred by the ear in certain combinations due to its logarithmic manner of response, according to an algebraic scheme developed by A.

While agreeing with A. in principle, I feel, however, that he has not gone far enough . I would rather like to sharpen the theorem in asserting that, although melody and rhythm need not necessarily be present, *any music stimulating a normal ear must not be lacking in harmony*. We hasten to stress the use of the word *stimulate*, meaning that the mind must find the experience *interesting,* not necessarily *pleasing*. Similarly when talking about *harmony* we also include such combinations of notes that appear discordant, i.e. both harmonies and disharmonies. For instance, a passage where a hard dissonance is resolved into a consonance yields a moment of tension, interesting but possibly not immediately enjoyable to the mind. Such a case, often used in jazz, is given in Example 1 (cf. also Ravel: Concerto in D, bar 48-5).

Before going further I would like to try to "explain" the "value" of twelve-tone music in terms usually employed in this context to see how the argument afterwards can be used — this time with relevancy — on the subject of harmony. It is generally argued that there exists a fourth element in music, to which is given various names. We shall use the name *composition technique*. The more than casual listener of twelve-tone music is supposed to compare what he hears with a predetermined mathematical scheme. By getting more and more accustomed to the scheme — possibly by listening to the same sequence repeatedly — his mind gradually takes an interest in trying to anticipate the notes that follow.

This procedure may eventually give him a certain satisfaction. However, while possibly stimulating some systematically minded centre of the human brain, the effect has nothing to do with the perception of *music* and could as well be conceived visually instead of via the ear (or, exaggerating slightly, by vititing a military training ground).

As a matter of fact, composition technique is very old, probably as old as music itself and is, for instance, predominant in baroque music. But baroque music also has the elements of melody and rhythm, which is probably the reason for its immense popularity. On the other hand it is very meager in harmony. Apart from the usual tonic, dominant and sub-dominant tonalities and their parallels, it only contains transition notes and minor sub-dominants with diminished fifth as discordants (example 2). This renders this music rather austere compared to later music, and it is difficult to explain the amazing popularity of, say, Bach also among serious listeners. An easy way out would be to say that Bach is *à la mode*, and will eventually disappear. But the explanation must lie deeper than so. Apart from the ease of understanding the obvious melody and rhythm inherent in his music, his popularity must lie in the rigorous adherence to a special composition technique that only allows for particular patterns in cadences and repetitions (e.g. in the fugue). As in the above argument, the listener gets used to a particular scheme and learns to expect certain passages,

thus getting interested. This explanation also checks with the often-stated fact that mathematically minded people appreciate Bach's music.

I firmly maintain that this is not the natural way of response, in the sense that while Baroque music may stimulate the mind in a certain way, it has less to do with music than with a mental exercise. On the other hand if one uses the getting-accustomed argument on *harmony,* one deals with an element that is immediately perceived by the ear and thus relevant for music. That is why works by Stravinsky and sometimes Bartok at a first audition may seem repulsive (cf. the reception of the Rite of Spring on its first performance) but after listening several times, one gets used to the interplay of harmonies and starts to appreciate the tension and drama suggested by the discords. In fact several of Bartok's many styles and all of Stravinsky's music are intensely harmonic. Listen for instance to the second movement of Piano Concerto #2 or the whole #3 by Bartok (see Example 3) or to the Rite of Spring (see example 4). In the mentioned works the rhythm is naturally also an extremely important element, whereas the melody is often totally absent. In any case, the interest in works by these giants in music lies in the harmony and its immediate relevance to the listener.

It is highly interesting to review all famous (and infamous) composers up to the nineteenth century from a harmonic point of view. One may try to compare them as inventors of now ingenious harmonies or of new combinations of known harmonies. One will then see that real exploitation of harmony hardly existed before Mozart, and then only in his latest works. Beethoven is the landmark of the full development of classical harmony. (Example 5 is a pattern that was probably never used before B.) But it would take too much space to try to give such a review here. Let it suffice to say that up to the middle of the nineteenth century one would find the classical rules of harmony prevailing, with here and there small protuberances of unorthodox thinking among giants of harmony like Brahms, Tchaikovsky and, in later years, Sibelius. Although many interesting ideas were brought forward during these centuries, there is really not much new until the breakthrough of modern harmony. From the period of change-over I would like to elaborate particularly on three names of outstanding interest in this context: Rakhmaninov, Ravel, and Gershwin.

Rakhmaninov is probably the composer that has exhausted to the utmost the possibilities of classical harmony, and therefore deserves special attention. He is often labelled as being too "sweet" for the serious listener, which is possibly due to his extensive use of the *melody* element. In fact, the use of melody was already very much exploited, and even abused, by composers such as Chopin, Liszt, and Paganini. However, the great difference lies in the fact that their harmonies consisted in great part of worn-out and eternally repeated patterns that made their music (in particular Chopin's) in my opinion, both unbearably sweet, and from harmonic point of view totally valueless. The situation is quite the reverse with R. The great value of the music of this outstanding master lies in the infinitely subtle use of classical harmonies that follow each other in an exquisite but almost unpredictable manner. See example 6, which is a modulation from E^{b} major to E^{b} minor using B-minor seventh as an intermediate, literally unheard of earlier.

The particular style of Ravel is so well-known that it may be unnecessary to say anything about it. His music is termed impressionistic and contains apart from entirely new harmonies also patterns with classical harmonies mixed together in new ways. Typical examples are swift changes from minor to major and back, sudden steps in tonality (D to F to A^{b}, etc.: Concerto in D, bar 14 and on), and jazz-inspired chords (use of the note C in A major: Concerto in G, first movement, bar 20-10). Example 7 illustrates the interesting use of a sub-dominant base note in a major chord. The effect of all this is a subtle, brittle, sometimes trembling or whispering quality to the music, which is accentuated by the choice of instruments and by broken chords (note that many French pianos possess the "brittle" tone that goes so well with Ravel's music).

There is a tendency to pass over Gershwin lightly as a composer, which to my mind is quite unjustified. A more profound study often reveals amazing innovations and sometimes explains why the ear reacts for this or that passage. Gershwin was, among other things, an outstanding master of harmony. This is most

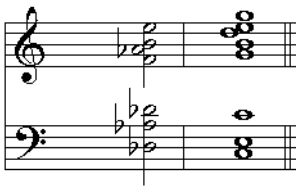
evident in his only really symphonic work: the concerto in F. Example 8, taken from this concerto, illustrates the use of a dominant-dominant base note in a quart-sixte chord, which as far as I know, is the first place in history it is used. Its effect is pleasing to the ear, yet leaving a slight uneasiness due to the quality of the dominant-dominant note (E^b). It is nevertheless a final chord, not to be resolved later on. Another example is 9, which consists of a ninth chord with diminished eleventh. This chord is penetratingly dissonant to the ear, and is used in this case as a climax to a long crescendo. It was probably used here (Rhapsody in Blue*)* for the first time but has subsequently often been exploited in modern jazz.

Finally, I would like to mention the one eminent genius of harmony who managed to combine the richness and mystery of oriental harmony with Western music: Aram Khachaturian. His style is partly classic, often sliding over to impressionistic, yet always intensely harmonic. If one tries to analyse his music, one finds slightly discordant harmonies that follow each other, often in a superficially irrelevant manner, but maintaining a certain coherence when taken over a longer part. This gives a particularly intriguing quality to his music. The richness of unusual harmonies and patterns is immense. A typical harmony is given in example 10. It consists classically of a dominant with an augmented fifth (A^b7+), but keeping the *diminished fifth* (D) in the base. Another typical disharmonic sequence is given in example 11. The main key is D^b major but the ambiance is suspended between tonic and dominant while maintaining the augmented fifth (as in Example 10), so that the ambiance is at the same time balancing between minor and major. This renders a particular, mysterious quality to the passage, reminding of oriental music. Listening to Khachaturian's music one cannot help being intrigued by the magnificent complex of tonalities, and one may want to see how this wondrous tissue has been built up. One will find that it is through the most extensive and unashamed exploration into the richness of the tone ever being made.

Naturally the subjective opinions given above are neither necessary consequences of the application of the theorem set out in the beginning, nor an attempt to impose any preference or liking on the reader. They are merely an example of how one's appreciation of music may be guided once one adopts the theorem. It is my firm belief that the theorem holds, at least for a great number of people. However, whether one believes in it or not, the fact remains that it leads to many interesting consequences. In particular it leads to a remarkable and inexhaustible source of pleasure: harmony in music.

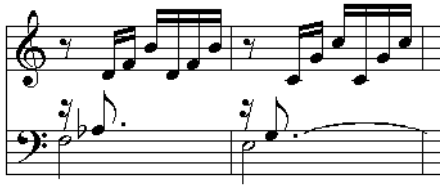
Example 1:

Use of the Napolitan sixth with ninth as dominant character (often employed in jazz).



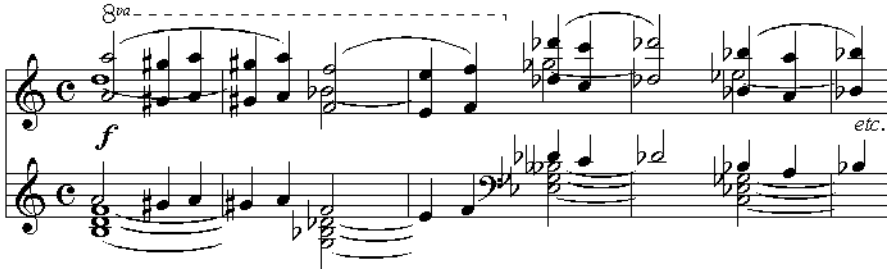
Example 2:

Bach's Prelude #1, bar 14. Minor sub-dominant with diminished fifth preceding the tonic.



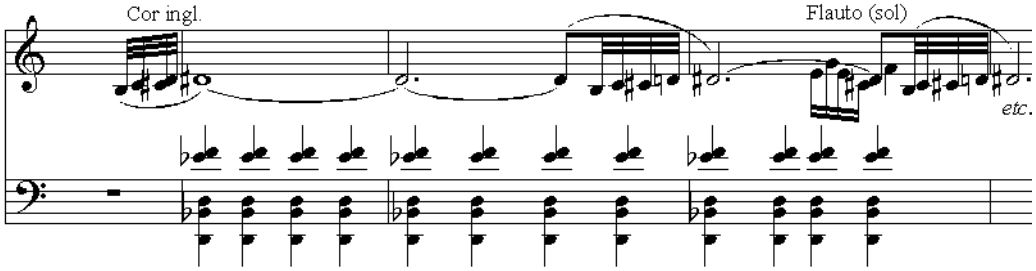
Example 3:

Bartok's Piano Concerto #3, second movement, bar 48. This is a sequence of minor sixths (D, B^b, G^b, E^b).

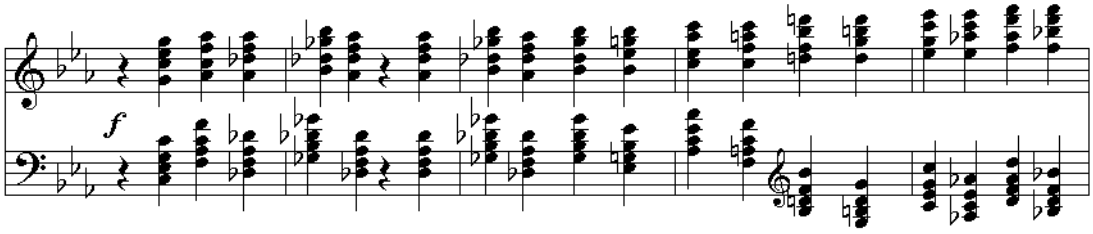


Example 4:

Stravinsky's Rite of Spring, "Action rituelle des ancêtres", bar 133.

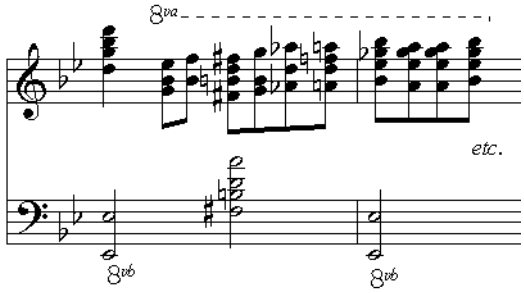


Example 5: Beethoven's Piano Concerto #5, first movement, bar N-30.



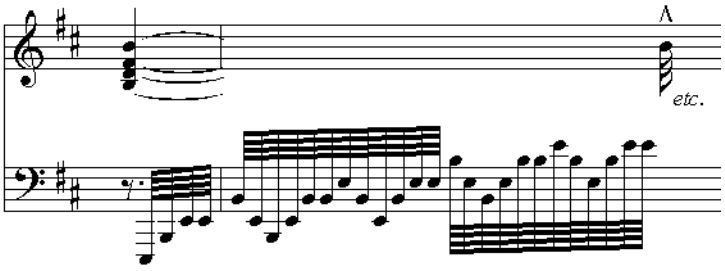
Example 6:

Rakhmaninov's Piano Concerto #3, first movement, bar 8-3 (analysis, see text).



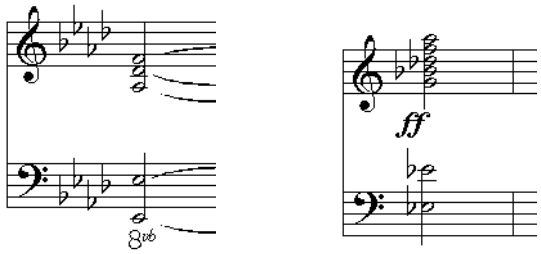
Example 7:

Ravel's Piano Concerto in D (left hand), bar 16. Note the broken base notes, yielding the particular trembling quality to this highly interesting harmony (sub-dominant base note in minor chord).



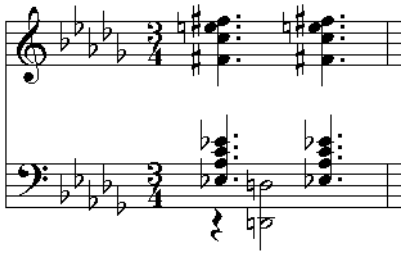
Example 8: Gershwin's Piano Concerto in F, first movement, bar 4-21 (analysis, see text).

Example 9: Gershwin's Rhapsody in Blue (B^b), end of *molto stentando* (analysis, see text).



Example 10:

Khachaturian's Piano Concerto in D^b, first movement, bar 38 (analysis, see text).



Example 11: Khachaturian's Piano Concerto in D^b, first movement, part of the Cadenza (bar 426). The highly dramatic atmosphere of these chords comes from the use of the slightly discordant augmented fifth (E) in the dominant of the first two bars. The tension is even more sharpened by the appearance of the discordant small third (B) in the last bar. These notes yield a quality of mixed major and minor (tonic and dominant, respectively).